Urban Mobility in Transition: The Impact of Free-Floating Car Sharing – Exemplified by the Case of DriveNow in Lisbon

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URBAN MOBILITY IN TRANSITION: THE IMPACT OF FREE-FLOATING CAR SHARING – EXEMPLIFIED BY THE CASE OF DRIVENOW IN LISBON

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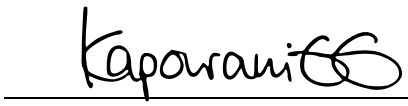

Eleftheria-Eleni Kapourani

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"The future belongs to those who believe in the beauty of their dreams."
- Eleanor Roosevelt -

Abstract.

Car sharing is introduced as an innovative, technology-driven mobility service to Lisbon's existing mobility mix, thus providing a mechanism to the growing transportation challenges the city is facing today. Urbanization and dominating motorized travel have come at economic, environmental, and social costs that car sharing aims to compensate and even reverse. The present thesis develops a theoretical framework – building on the concepts of urban mobility, automotive disruption as well as environmental pressures – to assist in gaining and improving the understanding of car sharing. Further, it discusses its implications including car ownership reduction and accompanying side effects and ultimately, necessary measures are recommended to accelerate the adoption rate of car sharing among consumers, and with that, its expected benefits.

Keywords: car sharing, urban mobility, intermodal travel, technology-driven disruption

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List of Abbreviations.

CDJ ..... consumer decision journey

CS ..... car sharing

e-mobility ..... electric mobility

EU ..... European Union

OEM ..... original equipment manufacturer

TDM ..... transportation demand management

1 Introduction

1.1 Outline of Problem Statement, Aim of the Study, and Research Question

It is eight in the morning, rush hour time. Cities are packed with vehicles, causing endless traffic jams throughout the streets of urban areas – a nightmare for most commuters, travellers or tightly scheduled freight shipment. While mobility has been vital to society and economy ever since the industrial revolution, in recent decades, rapid urbanization coupled with increasing wealth has intensified personal mobility as a mean of independence and freedom (Sager 2006). In return, deteriorating traffic and parking congestions have become norm in urban areas, which come at economic, environmental, and social costs including high fuel consumption, pollution, lost time in traffic and lower life quality (UN Habitat 2017; European Commission 2013; Litman 2003). Despite the fact that private cars "are underused assets (…) mainly active during peak-hours" (ITF 2015a, 9), they remain the favourite transport choice of individuals: In the Lisbon metropolitan area 60% of all trips are undertaken by passenger cars (ITF 2015a). Moreover, heavy regulations with a variety of measures are imposed by the European Union (EU) aiming at traffic and CO_2 emissions reduction (European Commission 2006). However, simply restricting vehicles in cities might not be the solution, rather sustainable alternatives are needed to reduce the amount of circulating vehicles and its negative effects.

Emerging technologies are opening up new markets in the context of urban transportation, such as bike sharing, ride sharing and car sharing, hence, revolutionizing cities and disrupting urban mobility. Considering the still prevailing car dependence of people to be mobile, car sharing has gained credence as a substitute to privately-owned cars. The innovative short-term car rental service is membership-based and typically paid by minute. In major European cities, it is increasingly being accepted not only due to modern information technology making them more user-friendly, but also due to the recent sharing economy trend shifting the car ownership paradigm in favour of sharing over owning a private car (Becker, Ciari, and Axhausen 2017). New organizations, e.g. Zipcar and Cambio, are entering the market as well as worldwide established original equipment manufacturers (OEMs), such as Daimler with car2go and BMW (in a joint-venture with SIXT) with DriveNow, thereby disrupting the

automotive industry (Grosse-Ophoff et al. 2017). Within this context, the fundamental objective of the thesis is to achieve a better understanding of car sharing as a new market opportunity as well as the complex interdependencies of its implications transforming urban mobility, specifically for Lisbon city. Further, it aims at deriving recommendations and appropriate measures to promote car sharing as an alternative transport option in Lisbon. Therefore, the developed research question guiding this thesis is *"How does car sharing impact urban mobility of consumers and which recommendations can be derived for the city of Lisbon?"*. For this purpose, the free-floating car sharing provider DriveNow, which launched in Lisbon in fall 2017, is used as an exemplifying case.

1.2 Academic, Economic and Social Relevance

Although urban mobility has been studied intensively, the field of car sharing is relatively unexplored in academic literature to date, which can be mostly ascribed to its recent emergence and evolution as an industry. In particular, comprehensive academic work on car sharing implications is sparse and lacking specifically for Lisbon. Hence, the thesis aims at closing existing research gaps and invoking future research. In addition to the academic relevance, car sharing hits the current shared mobility trend, which in 2016 formed a market of nearly $54 billion in the core regions of China, Europe and United States (Grosse-Ophoff et al. 2017). Meanwhile, DriveNow and other major car sharing operators are successfully seizing respective chances. Besides the strategic management perspective on capturing uncontested market space, the study provides a critical opportunity to raise the awareness of car sharing in Lisbon as an innovative approach to meet the significantly increasing mobility challenges. Beyond this motivation, urban mobility remains an essential social component. Therefore, this study is also of major social relevance by addressing the challenge of improving the access to and quality of urban areas, thus, enhancing our everyday mobility.

The selection of Lisbon in this study was guided by the recent launch of a new car sharing service in the city in September 2017, offered by the German company DriveNow (DriveNow 2017c). It counts among the youngest European markets (Oliveira and Nunes 2017), whilst car sharing is far more advanced, for instance, in Germany as reflected by the numbers of both users and vehicles outpacing

any other European markets (see *Appendix* 1 for statistics; Frost & Sullivan 2014a; 2014b). Further argument for Lisbon stems from a study by Arthur D. Little (Van Audenhove et al. 2014), which ranks it among the worst performing European cities considering mobility maturity and "policy initiatives undertaken by cities to improve the performance of urban mobility systems" (Van Audenhove et al. 2014, 6). Hence, it justifies the study's relevance considering the necessity of promoting sustainable urban mobility and upgrading Lisbon's infrastructure, in which free-floating car sharing contributes as a new, flexible, yet sustainable mobility option.

1.3 Structure of the Thesis

After the introduction, the following chapter presents the theoretical background in the form of a literature review. Therein, relevant existing academic work is synthesized in order to contextualize the study's research question and undermine its relevance. The applied methodology is outlined in *chapter 3* before entering a fundamental research analysis and discussion in the subsequent part of the thesis. In *chapter 4*, a short case-study about DriveNow opens up the empirical part and provides background information about the company necessary for the forthcoming discussion in *chapter 5*. In there, new market space created by DriveNow is analysed and its implications as free-floating car sharing are discussed, and ultimately, recommendations are derived for the city of Lisbon. By addressing the limitations and future research suggestions, the final chapter concludes the thesis with an outlook for car sharing in Lisbon.

2 Literature Review

2.1 Literature Choices and Theoretical Framework

Literature on car sharing emerged along with the service gaining popularity during the last decade, thus, most recent research was found relevant. Of that, recurrently referenced work is contributed by Shaheen and her colleagues, Millard-Ballare and Katzev. Extensive studies are also performed by major consultancies (e.g. McKinsey, Deloitte, BCG, Frost & Sullivan) and public organizations, such as the European Automobile Manufacturers Association and European Commission. Indicated in the introduction to the research topic, car sharing touches upon several fields, hence, literature on broader

terms (e.g. urban mobility, automotive trends) was compiled using relevant keywords in databases for scientific literature (e.g. EBSCO, Google Scholar). Consequently, a theoretical framework was developed bringing three key concepts together car sharing is embracing. As *Figure 1* presents, the conceptual model embodies the fields of i) *urban mobility in transition*, ii) *industry trends* (with focus on automotive), and iii) *environmental pressure*. To provide a comprehensive and holistic analysis, the following literature review is organized around it. However, it needs to be noted that the environmental component strongly interrelates with the other two, thus, an isolated review becomes obsolete. The intersection of all three forms the model's anchor – car sharing and its implications on the evolving trends of the *social*, *economic* and *environmental* dimension.

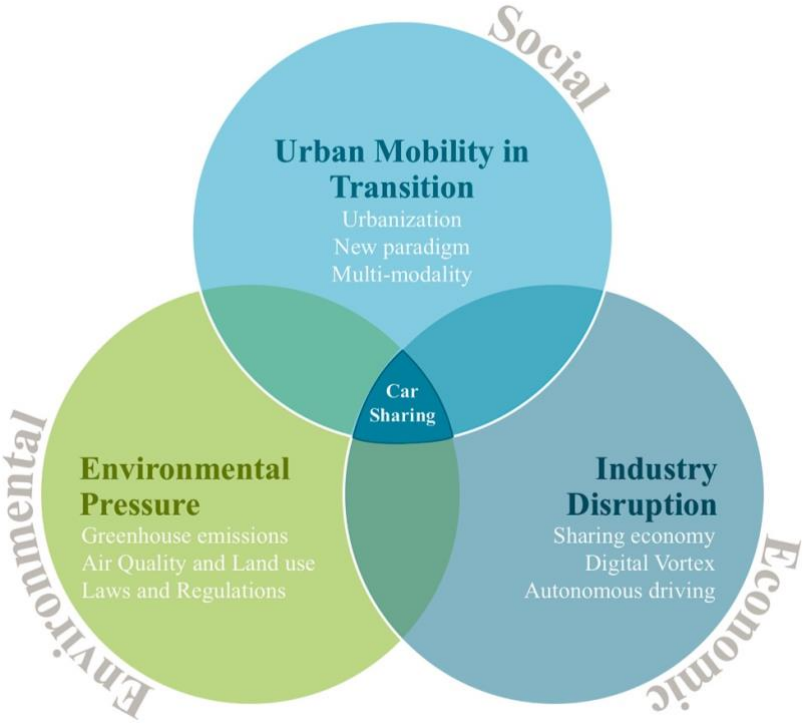


Figure 1. The conceptual model of this thesis
(Author's representation)

2.2 Urban Mobility in Transition

Worldwide, cities have been experiencing significant socio-economic change in recent decades. With the rapid urbanization, defined as "the transition from a rural to a more urban society" (UNPF 2007, 6), more than half of the world's population is living in cities nowadays. The shift naturally entails rising complexity for urban mobility due to a mounting motorization along with more and more people being on the move in cities (Costa, Neto, and Bertolde 2017; Litman 2012). Mobility "as the ability to move from one place to another" (Costa, Neto, and Bertolde 2017, 3646) has always been a vital part

of society for the purpose of commuting, leisure, or travel. Modern information technologies entails major advancements to society, bringing the world closer together, connecting people with each other, and opening up new opportunities of doing business. At the same time, this development raises the degree of mobility in modern society boosting both challenges of developing adequate urban infrastructure as well as the environmental impact (Litman 2012). To stem car-based mobility deterioration, major policy interventions have been put in place, such as CO_2 emission reduction targets, promotion of green vehicles (e.g. with electric propulsion), and user awareness campaigns among others (European Commission 2006; McKinsey Berlin 2016). It becomes obvious that urban mobility is a complex system to grasp involving various components ranging from different stakeholders to mobility modes and purposes (Rodrigue, Comtois, and Slack 2017; Macário 2011). Since a 360-degree perspective on urban mobility is out of scope, the thesis includes a simplified outline of the concept in *Appendix 2.1*. Given the purpose of this study, the focus lies on passenger movements (individual and public transit) and, for instance, neglects freight transportation.

In this context, the enduring transition of urban mobility receives critical attention in academic literature. Litman (2013) proposes a paradigm shift from a mobility-based perspective to the notion of accessibility. The major difference lies in *mobility* being defined as the physical ability of moving, whereas *accessibility* refers to reaching specific locations, activities or services (Button 2009; Litman 2003; Li et al. 2011). The old paradigm concentrates on automobile travel, traffic speed and congestion mainly, with problems being tackled mostly independently from each other, hence at the same time exacerbating others (Litman 2013; Tuominen, Kanner, and Linkama 2012). For instance, to reduce traffic congestion conventional transportation solutions have been road expansions, which in the short-run benefit motorists and ease traffic. However, eventually they stimulate additional car usage, which, in turn, has an adverse effect on environmental issues (e.g. increasing pollution and fuel consumption). This phenomenon is recognized in literature as *induced traffic* or *induced demand:* with increasing supply, more of the provided good is consumed (Hills 1996; Litman 2017). In simple terms, the more roads, the more driving, hence, the more traffic. It is a vicious cycle that research has been revolving

around since the 1960s (Litman 2017). In recent studies, Litman (2013; 2017) attempts to resolve it urging a systems-perspective and transportation-demand-management (TDM) strategies.

TDM entails a wide range of measures aiming at sustainable urban mobility that come with multiple, interconnected benefits. This implies the necessity of a paradigm shift: In contrast to the conventional mobility-perspective described above, the new paradigm emphasizes the aspect of *accessibility*, i.e. access from A to B. *Appendix 2.2* shows a detailed comparison of both paradigms. Since the availability of different mobility options, transit and network connectivity in a city affect accessibility, the new paradigm adopts a more comprehensive analysis (Litman 2013; Li et al. 2011). It calls for "improvements to alternative modes, incentives to use alternatives, and smart growth land use policies that reduce the amount of vehicle travel generated in a community" (Litman 2012, 26). Thus, the new paradigm encourages new mobility services, such as car sharing, although Litman does not refer to any explicitly.

Despite this drawback, a substantial aspect in Litman's new paradigm is the incorporation of *multi-modality* referring to passengers using different transport modes depending on their individual needs. Willing, Brandt and Neumann (2017) define *intermodal* mobility as a special subcase incorporating different transport modes in one single travel route. Both reflect contemporary personal travel in urban areas, where people use multiple public and/or private transportation modes on their own or in combination to achieve optimal travel efficiency and enhanced experience in terms of both convenient accessibility and quality of transportation (Willing, Brandt, and Neumann 2017; Jackiva and Budilovich 2017). To enable multi-modality, urban mobility systems need to expand transport modes offering a variety of sustainable options urban dwellers may choose from. Innovative mobility services are evolving along with technological advancements, thereby, increasing the "modal mix consisting of private cars, car sharing vehicles, public transportation, taxis, e-hailing (app-based taxi and transportation services), bicycles, and walking" (McKinsey 2016, 7).

Despite the rising alternatives of mobility means, the dominance of cars persist though, primarily because of increasing disposable incomes in developed countries as well as its "clear advantage over

other transport options, flexibility, comfort and availability, (…) in the eyes of users" (ITF 2015b, 3). However, since automobile travel accounts for major environmental degradation in cities (Katzev 2003; ITF 2015b), pressure is increasing on two sides: society and industry. On the one hand, urban dwellers should switch to more sustainable transport modes (Katzev 2003), on the other hand, EU policies as well as an increasingly environmental-conscious part of society are pleading automotive OEMs to undertake responsibility and resolve the environmental and social concerns. Studies (ITF 2015b; Litman 2012) reveal that these changing consumer and economic trends are causing a slowing down trend of vehicle travel (see *Appendix 2.3* for a statistic of developed countries), hence, boosting an automotive industry revolution that is addressed in the following section of the literature review.

2.3 Automotive at the Edge of Disruption and the Rise of the Sharing Economy

As Mary Barra (2017), CEO of General Motors, states, "the auto industry will change more in the next five to 10 years than it has in the last 50". Being in the midst of the biggest technology transitions ever, the *'digital vortex'* does not spare the automotive industry either (Loucks et al. 2016). The digital vortex is used as an analogy, which depicts the intensity and pace of disruption multiple industries will face. Compared to other industries like financial services and telecommunications (see *Appendix 3.1* for a full presentation of the digital vortex), the automotive industry might not yet be placed in the centre of the vortex, however, its future is predicted to be ruled by the key disruptor – the autonomous car (Loucks et al. 2016, 19). Fully autonomous cars might still be a vision, yet semi-self-driving ones are already out on the roads. BMW, Mercedes, or Tesla already introduced autonomous features in their cars, such as remote parking or semi-autonomous driving in traffic conditions, which are just a few examples of what the digital era makes possible.

Though, pressure on automotive is not purely technology-driven. A second, likewise important factor is shifting consumer demand. Studies describe a new generation of consumers emerging (Cornet et al. 2012; Corwin et al. 2016). Urbanization, a growing level of environmental awareness and a shift in social norms are "eroding the value of individual automotive ownership" (Cornet et al. 2012, 9). For many people, cars are no longer seen as a status symbol, which William Clay Ford Junior (2000),

chairman of the US auto legacy his great-grandfather founded, already anticipated almost two decades ago: "The day will come when the notion of car ownership becomes antiquated. If you live in a city, you don't need to own a car." (as cited in Slavin 2000). McKinsey confirms Ford's statement reporting a drop by 44% in car ownership among 18-29-year olds in Germany between 2000 to 2010 (Cornet et al. 2012, 9). In response, the automotive industry needs to shift from being product-centric to a "customer-centric mobility ecosystem, where the focus is on the experience of moving from point A to point B – rather than the physical vehicle itself" (Corwin et al. 2016, 16), endorsing Litman's new paradigm as defined above.

Technology-driven disruption goes hand in hand with changing consumer preferences. Evidence lies in the recently emerged phenomenon of *'sharing economy'* – an umbrella term that describes "sharing the consumption of goods and services through activities such as renting, swapping, or trading" (Hamari, Sjöklint, and Ukkonen 2015, 2048). Collaborative consumption is enabled by online platforms creating a variety of new businesses, such as pioneers Airbnb, Lyft, and Uber (Hamari, Sjöklint, and Ukkonen 2015). The motivation of people participating in shared consumption is another field of research that Hamari et al. (2015) elaborates to vast extent, yet it cannot be covered within this study's scope. In automotive, with the car losing its status symbol, the sharing economy nurtures innovative mobility services seen as the industry's new growth potential. They are estimated to boost revenues by 30% and diversify the automotive business (Gao et al. 2016) (refer to *Appendix 3.2* for a high-disruption scenario with new revenue streams). Consequently, as the automotive disruption, advancing technologies and the sharing economy-paradigm expand, *car sharing* is gaining momentum as an innovative alternative option in urban mobility systems (Corwin et al. 2016; Beiker et al. 2016). It feeds the last section of the literature review that follows.

2.4 Car Sharing – an Innovative Approach to Mobility

2.4.1 The Evolution of Car Sharing to a Commercial Service

In fact, car sharing is not an invention of the 21st century. The first concept appeared in Zurich, Switzerland in the late 1940s, known as *'Sefage'* (German for 'Selbstfahrergenossenschaft'), which

offered a small fleet of vehicles to people, who could not afford to purchase one (Shaheen and Cohen 2013, 7). Several attempts in other European cities followed, however, the post-war era brought fast and cheaper private motorization in the 1950s and diminished the attractiveness of car sharing services. In addition, complex processes to use the service hindered a real breakthrough. However, the successful revival came around the turn of the millennium. *Appendix 4.1* outlines three phases of car sharing evolving into today's commercial service. Its major boost was given by increasing publicity and attention about sustainable transportation alternatives, economic trends as well as consumer preferences moving away from traditional car ownership. Thereby, technology has been the key accelerator unlocking the potential of car sharing by delivering user-friendly systems and efficient business operations. The rise of the sharing economy phenomenon has been crucial push for social acceptance. However, social and environmental factors were and still are a major driver for car sharing demand, in particular in dense urban areas with heavy congestions (Katzev 2003), closing a loop on the first parts of the thesis' literature review.

Moreover, society is "moving from a market-based economy to one, in which private possessions are no longer as important as having *access* to them", what Rifkin (2000) characterizes as the "age of access" (as cited in Katzev 2003, 68). It has driven many industries through major disruption such as the music industry with streaming services (e.g. Spotify, Pandora and Apple Music) replacing music ownership in the form of traditional CDs and downloaded files. Accordingly, car sharing "divorces the notion of automobile use from ownership by providing individuals with convenient access to a shared fleet of vehicles, rather than a single privately owned one" (Katzev 2003, 68). In which way consumers get access to auto-mobility is determined by the various forms of car sharing, which emerged within time and growing acceptance among consumers as presented in the following section.

2.4.2 Car Sharing Business Models and Operators

Today, car sharing encompasses various business and operational models (Millard-Ball et al. 2005; Deloitte 2017), which explains the blurry definitions of the concept. Nowadays, the term refers to a service providing registered customers with access to a fleet of vehicles typically based on a minute or

hourly fee. Often, car sharing is confused with similar services that also operate with shared fleets, such as ride sharing, car pooling and peer-to-peer car sharing. Given the research question and the limited scope of the thesis, the focus of investigation lies on private, individual usage of shared cars provided by private corporations. In order to avoid confusion, *Appendix 4.2* provides an overview of similar, yet different mobility services. Key distinction appears in car sharing being regarded as a true "alternative to private car ownership that provides access to a car when walking, cycling, or public transit is not possible or convenient" (Katzev 2003, 67). With a charging system of 'pay-as-you-drive', it is suitable for short trips a few minutes to some hours, whereas conventional car rentals charge daily rates, thus, being rather reasonable for medium- to long-term trips of at least one day.

Nowadays, two main operating models of car sharing are distinguished: *station-based* (round-trip) and *free-floating* (one-way) (Le Vine, Zolfaghari, and Polak 2014). As the name implies, station-based car sharing requires the user to pick and drop the car at specific stations of providers. In contrast, free-floating car sharing operates a fleet of cars that can be found and parked anywhere within a defined operating area (*'business area'*) of the service provider. Keeping the motive of providing a substitute to a private car, which is usually available anytime, free-floating receives more credit: Being app-based and technology-driven, it allows users to select the closest vehicle by using real-time information on car availability, which results in increased flexibility and independence of fixed pick-up (and drop-off) locations (Le Vine, Zolfaghari, and Polak 2014). Given its superior convenience, it has gained greater acceptance than station-based services reflected by a tremendously increasing customer base, as for example seen in Germany being almost triple the station-based one (refer to *Appendix 4.3* for its statistic; (BCS 2017). Moreover, it is especially suited for short, inner-city trips, resulting in a high circulation of vehicles and increased user turnover. Accordingly, studies reveal a higher utilization of free-floating fleets with up to 173 users per vehicle whereas one station-based vehicle may attain maximally 50 users in average (BCS 2017). Consequently, the introduction of free-floating has accelerated the popularity of car sharing in general among a broad mass of society.

The advancement of car sharing would not be realized without its major operators. Besides the classification of station-based and free-floating car sharing providers, major operators are distinguished between subsidiaries of automotive incumbents (e.g. car2go by Daimler, DriveNow by BMW and Sixt) and newly founded independent car sharing organizations, such as Zipcar and Enjoy (Le Vine, Zolfaghari, and Polak 2014). Main European operators are listed in *Appendix 4.4*. Well-established OEMs, like Daimler, BMW and Ford, have sensed the potential of new mobility services opening up new revenue streams that up to now have been primarily centred on car ownership (Gao et al. 2016). Despite their core competencies being traditionally product-centric, they benefit from extensive knowledge about consumer behaviour in terms of automotive mobility. Thus, it enables them to adapt their car sharing offering accordingly, yet it still remains subordinate to their car-based core business.

2.5 Applied Frameworks: from Uncontested Market Space to New Consumer Journeys

The literature review illustrates that car sharing is expanding the existing industry boundaries of automotive and mobility with the rules of the game unknown yet. Hence, it has opened up a new market, non-existent in that form before, which prompts the creation of a *Blue Ocean* – a renowned strategic approach by Kim and Mauborgne (2004, 77) referring to the creation of "uncontested market space". With the analogy of a *blue ocean*, the authors illustrate "the wider potential of market space that is vast, deep, and not yet explored" in contrast to highly competitive *red oceans* of existing industries, where "companies try to outperform their rivals to grab a greater share of existing demand" (Kim and Mauborgne 2015a, 106). Following a Blue Ocean strategy, OEMs, in particular, are able to create value innovation with new mobility services, without stealing market share of other competitors (Kim and Mauborgne 2004). To see how DriveNow succeeds in doing so, the Blue Ocean frameworks (e.g. *Six Paths* and *Strategy Canvas*) provide solid tools for the upcoming research analysis.

By tapping into new market space, car sharing generates new demand as it provides a substitute to private cars while at the same time it enhances the mobility alternatives consumers have. Consequently, a critical review on the existing consumer journey for the case of DriveNow is required. In marketing, such journeys have been commonly illustrated through the *'funnel'* metaphor (known as *purchase* or

conversion funnel) to describe the sequence of phases consumers undergo from initial awareness, consideration to purchase and consumption (Court et al. 2009). The funnel's linear and simple approach, however, does not cope with shifting consumer behaviour and challenging environments of today's markets. Therefore, McKinsey created an updated version, termed the *'consumer decision journey'* (CDJ) (see *Appendix 5* for a comparison of both approaches), which takes into account new touchpoints and decision factors arising from empowered consumers being well-informed and actively evaluating their increasing choices with the help of modern information technology (Court et al. 2009). The new journey depicts an iterative process with two loops. Initially, consumers enter a consideration and evaluation phase, thereby adding and removing product or service options over time, before their post-purchase experience leads them either back to a new consideration and evaluation round or into a loyalty loop, where consumers bond with a brand (Court et al. 2009). Due to its wide-ranging applicability across industries, the framework is suitable to the present case where car sharing in Lisbon is challenged to deliver a superior experience to be (re)considered among the city's increasing mobility mix. Most important, it provides a practical concept to guide recommendations along the different stages of the consumer decision journey in the context of car sharing.

In conclusion, the developed conceptual model (see *Figure 1* p. 4) building on social, economic and environmental trends, provides the foundation for a following research analysis and discussion. Together with the above-mentioned frameworks, they compose the empirical part of the thesis, which opens with the applied methodology in the following.

3 Research Approach and Methodology

To investigate the identified research problem, the thesis applies a *deductive* research approach, which implies developing a theoretical position prior to data collection (Saunders, Lewis, and Thornhill 2009, 61). By contrast, an inductive approach puts data collection before developing theory (Saunders, Lewis, and Thornhill 2009, 41). Consequently, the literature review precedes the empirical part of the thesis that examines the identified conceptual model using primary data. Considering the study's objective, namely seeking insights about car sharing and its implications on Lisbon's urban mobility, an

exploratory research design is advised (Saunders, Lewis, and Thornhill 2009, 139). Among the several ways to address the defined research question, *a case study* was selected as most appropriate based on Robson's (2002) definition of involving "an empirical investigation of a particular contemporary phenomenon [i.e. car sharing] within its real-life context [i.e. in Lisbon] using multiple sources of evidence" (as cited in Saunders, Lewis, and Thornhill 2009, 145). Likewise, Yin (2003, 7) advocates the use of a case studies to address *'how'*-questions, which complies with the question type of the present study (see *Chapter 1.1*). Moreover, he argues that the case study-format "benefits from the prior development of theoretical propositions to guide data collection and analysis" (Yin 2003, 14).

To profit from the case study's strength of integrating a variety of evidence, the thesis builds on the principle of interplay of several sources to increase its reliability (Yin 2003, 14). Thus, instead of an isolated use of single research methods, the study employs *triangulation* in its original form, i.e. the combination of diverse *qualitative* research methods, which "reflects an attempt to secure an in-depth understanding of the phenomenon in question" (Denzin 2012, 82). This way, findings from different data sources are cross-validated, and enhance both the quality and credibility of the qualitative investigation (Patton 1999; Saunders, Lewis, and Thornhill 2009, 146; Yin 2003, 98).

In this thesis, secondary data was *triangulated* with primary, qualitative data. Desk research, i.e. *secondary data* was consulted for the main theoretical body of the thesis as presented in the previous literature review. Given the exploratory nature of the thesis, qualitative, non-standardised research interviews, were selected for *primary data* collection (Saunders, Lewis, and Thornhill 2009, 321). Though much information on the studied company is available online, first-hand information from different perspectives provide deeper insights into the field of study. For this purpose, in-depth, unstructured interviews were carried out in the very beginning of the study during the author's internship at DriveNow's headquarters in summer/early fall 2017, which provided profound knowledge about the car sharing business and the company DriveNow. At an advanced stage of research, semi-structured interviews were added with two groups of interviewees defined: i) car sharing experts, and ii) car sharing users, who have already experienced DriveNow in Lisbon.

Expert interviews were conducted with selected DriveNow employees based at the headquarters in Munich, yet all of them involved with the business in Lisbon. Their areas of expertise include Business Development, Public Relations and Marketing. In addition, a local manager (from DriveNow's franchise partner Brisa) was interviewed due to his expertise particularly of the Lisbon market and the proximity to it. For the second group, 'early-adopters', i.e. consumers, who were among the first ones to try car sharing by DriveNow in Lisbon, were interviewed. An interview guide (attached in *Appendix 9.1*) was developed in advance on basis of the studied literature and led through the face-to-face discussions with the interviewees, conducted by the author of the thesis (see *Appendix 9.2* for transcripts). Considering the short time of DriveNow being in Lisbon as well as the study being of exploratory nature, it was decided against a quantitative research method (e.g. a questionnaire) undermining the necessity of open-ended questions to answer the research question. Before entering the research analysis and discussion, a short outline of DriveNow and its business in Lisbon is provided in the following.

4 Case Study: DriveNow in Lisbon

4.1 Overview of DriveNow

DriveNow was founded in 2011 as a joint-venture between the BMW Group and Sixt SE, a major international car rental company also based in Munich (BMW Group 2011). Seizing the potential of car sharing, DriveNow entered the market offering flexible car sharing within a predefined business area without fixed drop-off and pick-up locations on an 'all-inclusive' minute-based fee that covers fuel, insurance, car tax and parking. The service is based primarily on a smartphone app (available for Android and iOS) with selected offerings on the website (drive-now.com). Thus, it is strongly technology-driven, self-service based and works keyless with the app being the all-in-one tool to finding, reserving, unlocking and locking the car. Besides its well-established position in mature markets in Germany, Munich, Berlin, Dusseldorf, Cologne and Hamburg, DriveNow expanded to several European metropolitan cities. To this day, the service can be used across Vienna, London, Copenhagen, Stockholm, Brussels, Milan, Helsinki and, just recently, Lisbon as well. *Appendix 6.1*

provides an overview of all locations including the respective fleet size. In total, they account for a fleet size of 6,250 cars as of December 2017 (DriveNow 2017e). DriveNow customers enjoy high-quality premium vehicles of BMW and MINI. Compared to other car sharing providers, having electric vehicles in *every* city (BMW i3) makes DriveNow truly unique. Beyond this, it gains further competitive advantage in offering a high variety of premium cars for every occasion ranging from city cars to small compact cars and SUVs to convertibles for extra driving pleasure (see *Appendix 6.2* for its model mix). Despite strong competition from car2go in most markets, the free-floating car sharing provider by Daimler, DriveNow is increasingly gaining acceptance as reflected in its double-digit growth rates in customer registrations in 2016 with a year-on-year increase of 42% (DriveNow 2017a). A true milestone was reached in fall 2017, when DriveNow celebrated one million customers (DriveNow 2017d).

4.2 DriveNow in Lisbon

> *"As is the situation in many European cities, Lisbon is faced with the challenge of easing the traffic situation and reducing emissions at the same time. This is why there's a lot going on in the city in reference to sharing. With DriveNow, the mobility options will now also encompass a flexible automobile component"*
>
> – Nico Gabriel, Managing Director of DriveNow. (DriveNow 2017c)

This statement illustrates the motivation to choose the Portuguese capital for the latest city launch in September 2017 (DriveNow 2017c). For the thirteenth location, DriveNow joined forces with Brisa Group as its franchise partner, Portugal's largest private transport infrastructure company (DriveNow 2017c). The benefits of this cooperative venture embody Brisa's long-standing expertise in transportation and innovative mobility solutions as well as extensive market knowledge (DriveNow 2017c). From Brisa's point of view, DriveNow is the ideal partner to fill the gap in its vision of providing an innovative mobility ecosystem to Portugal and in particular to Lisbon (Expert Interviews 2017). Moreover, by having a well-known Portuguese company on board, the familiarity with and popularity of Brisa's strong brand ViaVerde stimulate Portuguese consumers to try out the new service in Lisbon. It eases to build trust with the service and DriveNow brand among potential customers. As Vasco de Mello, CEO of Brisa Group, concludes that "this facilitates [the] start in Lisbon enormously"

(DriveNow 2017c). In the starting phase, DriveNow customers can select among 210 BMW and MINI vehicles, thereof ten electric BMW i3s, in central Lisbon (refer to *Appendix 6.3* for the scope of its business area) (DriveNow 2017e). As an expert interviewee (2017) assessed, Lisbon's mobility ecosystem constitutes DriveNow's competitive environment. Direct competition is limited to CityDrive (free-floating) and 24/7 City by Hertz (station-based), which however do not address the mass since they operate a very small fleet of less than 50 vehicles (Oliveira and Nunes 2017). By contrast, the indirect competitive environment is regarded as far more critical: Next to Lisbon's well-established public transportation network (Correia, Jorge, and Antunes 2014), innovative mobility services are available to the mass, for instance, shared bikes by Gira, scooters by eCooltra or taxi-like services like Uber and Cabify (see *Appendix 7* for Lisbon's mobility ecosystem).

By introducing free-floating car sharing to Lisbon, DriveNow might soon prove to be a promising transportation alternative enriching the city's mobility ecosystem. To see its diverse impact as well the challenges coming along in Lisbon, the following chapter analyses the new market space created, assesses its implications, and finally presents the recommendations derived for DriveNow and the city to engage consumers and advocate the usage of car sharing.

5 Research Analysis and Discussion

5.1 Strategic Analysis of DriveNow's Blue Ocean

As indicated in the literature review, DriveNow opens up uncontested market space with free-floating car sharing in Lisbon. So instead of applying well-known frameworks, such as *Porter's five forces* or *SWOT*, which focus on existing industries and competition resulting in red oceans, the thesis advocates the application of the *Blue Ocean* frameworks by Kim and Mauborgne (2015b). Besides extensive literature, the conducted interviews assisted in deriving compelling arguments illustrating that DriveNow is creating and capturing a *Blue Ocean.* To answer *how* DriveNow succeeds in doing so, Kim and Mauborgne's *Six Paths Framework* is applied (see *Figure 2*). Out of the six approaches defined, DriveNow has identified several promising opportunities. Firstly, it reaches beyond the boundaries of existing markets (*Path 1: Looking across alternative industries*) by offering the

flexibility of driving a car without the hassle of owning it. Consequently, it eliminates the car ownership paradigm, which has been the core of carmakers' business, hence, succeeding to escape from the red ocean trap of the matured and highly competitive car making industry. Simultaneously, it is looking beyond the traditional transportation market adding car sharing as a new mean to the existing set of (public) mobility means. Further, DriveNow addresses *new customer groups* (*Path 3*) that can be classified into three groups: i) new drivers without any private car before, ii) existing car owners that do not really need their private car and would like to abolish it if a true alternative is given, and iii) car owners that use car sharing in addition to their own car (Cornet et al. 2012). Thus, expert interviewees highlight *"younger target groups, 21 years old and above. Generally speaking, students and young professionals that the traditional automotive industry, and in particular premium OEMs like the BMW Group, did not address before"* (Expert Interviews 2017). Potential growth is also seen in *"elderly people, best agers, who move back to the cities, where they get a good infrastructure, a good public transport network, cultural offerings. And they do not really want an own car in the city. But here and there, they want to be auto-mobile. And as they are becoming increasingly tech affine, and use smartphones, they get more and more access to digital mobility solutions"* (Expert Interviews 2017). Lastly, by *looking across time* (*Path 6*), DriveNow seized the new market opportunity that emerged from changing social norms along with the trend of urbanization and sharing economy, which all together disrupt the conventional car ownership paradigm in favour of car sharing.

	Red Ocean	***Blue Ocean***	***DriveNow***
1) Industry	Focus on rivals within industry	Looks across alternative industries	→ Away from traditional automotive industry, which focus is *making* and *selling cars*, to a *service*-based car driving market with *shared* fleets.
2) Strategic Group	Focuses on competitive position within strategic group	Looks across strategic groups within industry	
3) Buyer Group	Focuses on better serving the buyer group	Redefines the industry buyer group	→ Extends target groups by age demographics: from younger people who don't afford a private car to elderly ones who require car driving only occasionally and thus don't need a private car.
4) Scope of Service	Focuses on maximizing the value of product and service offerings within the bounds of its industry	Looks across to complementary product and service offerings	→ Service includes parking costs, fuelling, tax, insurance, car maintenance. No acquisition costs.
5) Function-emotional orientation	Focuses on improving price performance within the functional-emotional orientation of its industry	Rethinks the functional-emotional orientation of its industry	
6) Time	Focuses on adapting to external trends as they occur	Participates in shaping external trends over time	→ Age of 'access' (e.g. music streaming instead of buying), sharing economy trends, car ownership losing status especially among younger generations.

Figure 2. Six paths framework – DriveNow creating blue ocean and escaping red ocean
(Author's representation based on Kim and Mauborgne 2015b)

The analysis illustrates that DriveNow not only creates *value* for consumers by enriching their individual mobility options but it aligns it with market-pioneering *innovation* of sharing a fleet that is accessible with one smartphone app – resulting in *value innovation*, the cornerstone of Blue Ocean (Kim and Mauborgne 2015b). Value innovation emerges through differentiating and pursuing a low-cost strategy at the same time. Differentiation is accomplished by reaching beyond existing demand and understanding the needs of both car owners and non-owners. Thinking of households, e.g. families, who depend on one or even two cars, DriveNow becomes the *"substitute for a (second) private car, so that they don't need to acquire one but still remain flexible"*(Expert Interviews 2017). Also, it addresses consumers without private cars, who like to drive occasionally. For both types of users, value is lifted by lowering the costs compared to owning a car (including acquisition or leasing, service and maintenance costs), yet keeping the flexibility of car driving. As a result, DriveNow creates a differentiated value curve in contrast to car ownership. The *Four Actions Framework* as well as the *Eliminate-Reduce-Raise-Create-Grid* (see *Appendix 8* for details) supplement the analysis coupled with the insights derived from the interviews. The four actions of eliminating, reducing, raising or creating certain factors (horizontal axis) are put in relation to a private car (vertical axis with high and low scores), resulting into DriveNow's *Strategy Canvas* that graphically demonstrates the different value curves in *Figure 3*.

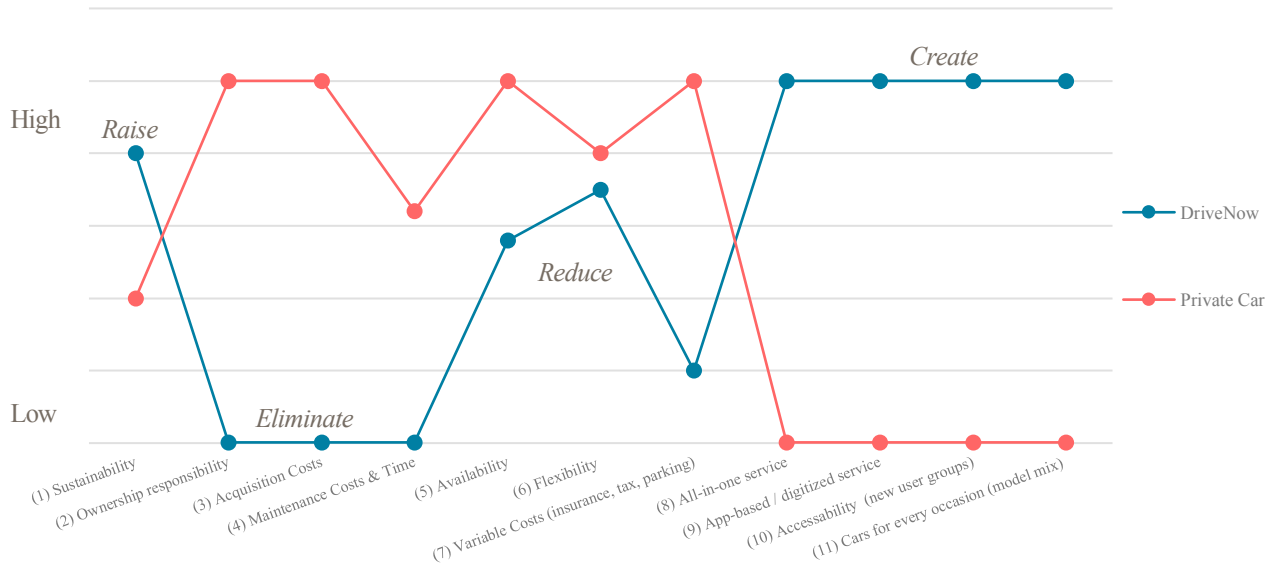


Figure 3. Strategy canvas of DriveNow
(Author's representation based on Kim and Mauborgne 2015b)

As the figure shows, DriveNow *raises* the *sustainability*[1] level ([1]=factor (1) in chart) of car-based mobility because of its environmental benefits that are further elaborated in the following section. Additionally, it *eliminates* the responsibility of car ownership[2] that brings high fixed costs along with extra time effort (e.g. acquisition, maintenance and service)[3+4], while still offering the availability[5] and flexibility[6] of a private vehicle yet on a *reduced* level, which is owed to the limited car sharing fleet size. Considering the variable costs[7] of a car such as fuel costs, parking, insurance and car tax, DriveNow includes them within its minute-based rates, however, due to economies of scale accomplished through hundreds of people using one car, they are far lower in sum compared to a private car, which usually benefits only a handful of persons (typical household size). Moreover, it *creates* new factors – an all-in-one, app-based service[8+9] that enables new consumer groups[10] to drive a car, who do not have a private one or a variety of models for specific occasions[11] at disposal. Irrespectively of its value innovation on a corporate level, DriveNow can only be regarded as "sustainable in its original sense, if both environmental, economic and social benefits result" (Loose 2010, 3). A detailed analysis of the implications of car sharing across these three dimensions is presented in the following section.

5.2 Implications of Free-Floating Car Sharing in Lisbon

The literature analysis exposed a variety of implications of free-floating car sharing that were reaffirmed and evaluated by the expert interviewees with respect to their relevancy for Lisbon. Building upon the developed theoretical framework, these core factors encompass all three dimensions identified – social, economic and environmental – with strong interrelations of single effects.

5.2.1 Environmental Implications

First of all, intensified use of car sharing leads to reduced car ownership, and consequently, less cars per capita. Previous studies show remarkable results that a car sharing vehicle replaces between three (Cornet et al. 2012; Millard-Ball et al. 2005; Schreier, Becker, and Heller 2017) to ten (Loose 2010; Le Vine, Zolfaghari, and Polak 2014; Shaheen and Cohen 2013) individually-owned ones in Europe. The significant reduction of private cars is enhanced by free-floating systems since it provides

increased availability (i.e. cars distributed everywhere in business area) (WiMobil 2016). Both research and experts argue that with car sharing people are willing to give up their private car and several already have done so (WiMobil 2016; Shaheen and Cohen 2013; Le Vine, Zolfaghari, and Polak 2014). Thus, both road users and the city are benefiting from a reduced amount of circulating cars. Direct effects concern the environment with lower air pollution and noise reduction in a city. In addition, reduced parking demand benefits urban design in terms of land use: previously needed parking lots, which take up large amounts of city space, become available for public green areas.

Another fact is that cars are underused assets "mainly active during peak hours and rarely for more than 10% of the day – in fact, most are used for less than one hour a day" coupled with lower occupancy rates per trip (ITF 2015a, 9). Car sharing vehicles by contrast are utilized much longer per day, consequently, requiring a more rapid renewal of the fleet, which decreases the average life cycle of shared cars. However, the latest technology is introduced with new cars at a much faster rate compared to the Portuguese replacing their private cars in average every 10 to 20 years (Eurostat 2015). Hence, in contrast to the large share of 'old' passenger cars, DriveNow operates fuel-efficient fleets providing additional environmental benefits of reduced emissions and fuel consumption. DriveNow specifically is able to maximize those effects by including zero-emission electric cars in its fleets in every location. While in Lisbon ten BMW i3 are currently available, taking all DriveNow locations together, the car sharing operator has recorded almost two million zero-emission trips thus reducing over 2,500 tons of CO_2-emission up to date (DriveNow 2017d). The noteworthy contribution of car sharing to urban life quality by lessening environmental and traffic challenges advocates car sharing in particular on a political level. Public support by the city as well as favourable transport policies determine the mobility mix including the usage of car sharing, hence, the extent of positive effects as well (ITF 2015b).

5.2.2 Social Implications

Changing social norms and the sharing economy trend are fostering post-materialistic values against car ownership. By increasing the choice of mobility options individuals have now in Lisbon, DriveNow also stimulates adopting *intermodal* travelling. Since car sharing is regarded "as a complementary

service not a substitute" (Expert Interviews 2017) within Lisbon's mobility ecosystem, it builds the missing link between existing transportation means that up till now might have required a car. It provides efficient last route connections, for instance, when traveling with public means and using DriveNow for the last kilometres to a location that is not well connected by the network. As one expert states *"the more attractive and available the entire mobility mix is in a city, the denser the transportation network is, being it public transportation, taxi, bike sharing, station-based or free-floating car sharing, the more likely it is that people can be mobile without an own car*" (Expert Interviews 2017). Studies show that car sharing users adopt much more multimodal travel than non-users, integrating other sustainable travel means, such as biking, walking and increased public transport usage (WiMobil 2016). Since free-floating car sharing provides much more flexibility compared to station-based systems it is increasingly integrated in people's everyday mobility (WiMobil 2016), sparking a change of lifestyle and way of thinking among consumers. On top of this, changing transportation behaviour of car sharing users makes multimodality "to a more environmentally friendly paradigm" (Willing, Brandt, and Neumann 2017, 174).

5.2.3 Economic Implications

Many people fear that car sharing is cannibalizing the actual car manufacturing business. However, studies prove that although vehicle sales may be slowed down with increasing popularity of car sharing, it won't reverse them (Grosse-Ophoff et al. 2017). Instead it provides new opportunities for the automotive industry, which is ripe for disruption. With their own mobility services, OEMs can still be present in megacities, generating awareness for their car brands as well as capturing new market shares and revenue streams (Gao et al. 2016). In addition, car sharing brings electric mobility (e-mobility) closer to consumers, especially with DriveNow's zero-emission i3 models. Due to an overall positive driving experience the demand for electric shared vehicles is constantly high as studies and interviewees confirm (WiMobil 2016; Expert Interviews 2017). Thus, with DriveNow in Lisbon's mobility ecosystem, the city can anticipate an extra boost of e-mobility as well. However, it needs to be stressed that it strongly depends on the available charging infrastructure. Experts assess it to be

currently very poor in Lisbon, which also explains the low share of i3s in DriveNow's fleet (Expert Interviews 2017). If the city enhances the amount of functioning charging stations, the number of electric vehicles can be increased and the environmental effects further amplified. It can be said that car sharing will play an essential role in the spread of e-mobility within the upcoming years, having positive side effects on sales of private electric cars.

5.3 Recommendations

The extent of the previously explored implications on Lisbon's mobility system can be strongly influenced by the actions taken today. First of all, it depends on the number of DriveNow members and the actual car sharing usage rate, meaning that both car sharing in general and DriveNow as a brand need to position themselves within consumers' paths and become so compelling to be considered as a relevant transportation choice. The ultimate aim is to engage with consumers in a way that locks them into the *loyalty loop* of the *consumer decision journey* (CDJ; see *Chapter 2.5* for literature background). Once consumers have bonded with the brand, they have built a trustful relationship with DriveNow and do not consider alternative providers. To see how DriveNow can lock them within the loyalty loop, the following measures are recommended along each step of the journey (see *Figure 4*), which both DriveNow and the city of Lisbon need to understand and apply.

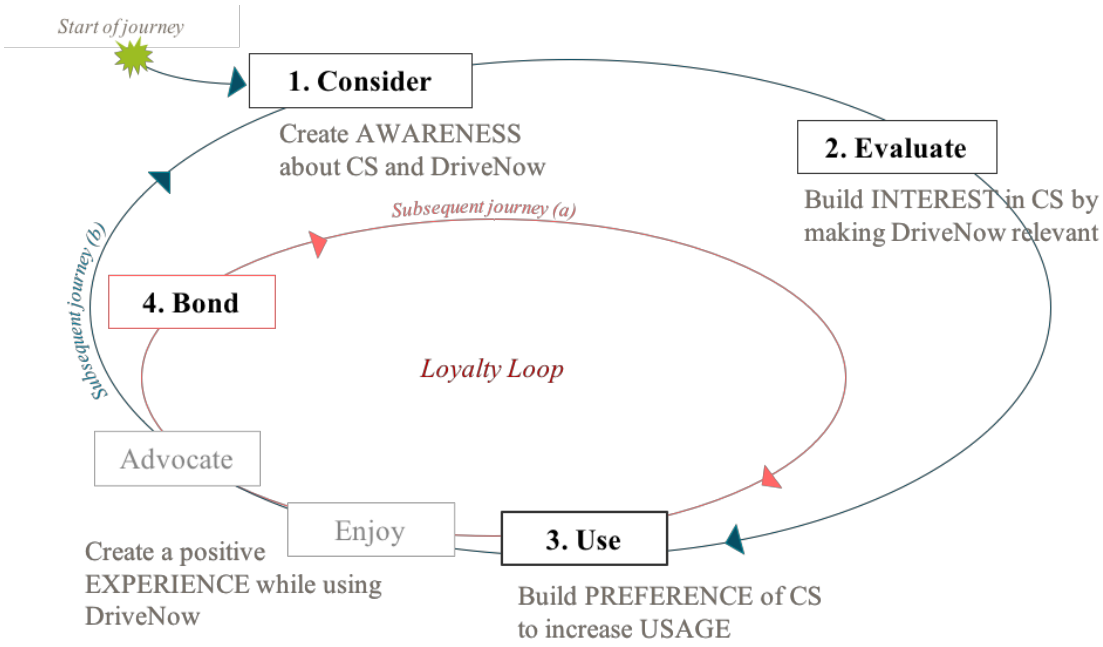


Figure 4. The consumer decision journey for car sharing by DriveNow
(Author's representation based on Edelman and Singer 2015)

Considering the early phase of car sharing in Lisbon, DriveNow is only known among early-adopters, not to the masses of the city yet, excluding tourists and people knowing the service from abroad. Hence, DriveNow and car sharing as an innovative service need to disrupt people's *consideration set* (step 1 in CDJ) of transportation means in order to make them positively evaluate and actually use it. Key measures concern increasing awareness, specifically the brand recognition of DriveNow. On the one hand, DriveNow can make use of conventional marketing tools like social media and out-of-home campaigns. On the other hand, Lisbon city and the government can actively promote it, for instance, by introducing a car sharing law as it is already common in Germany, which not only provides "a legally secure means to make the forgoing of private car ownership more attractive" (DriveNow 2017b) (e.g. through car sharing-dedicated parking lots) but also emphasize the public recognition of it as a vital contributor to sustainable mobility in cities.

Further, car sharing should be included in the multimodality system of Lisbon. Experts suggest implementing *mobility hubs* that bring different transportation means together, thus, facilitating transit. Consumers "*drive with public transportation means like bus or metro to a hub and directly change there to a DriveNow for the last mile of their route"* (Expert Interviews 2017) hence, increasing intermodal traveling. Another advice is to introduce a multimodality platform for Lisbon in form of a mobile website or app, such as moovel[1] that conveniently combines different transportation modes in one. This innovative solution makes trip-planning more efficient and is tailored to personal needs just-in-time. This way, car sharing not only becomes relevant in people's everyday life but at the same time public transport is reinforced as well.

DriveNow needs to create brand interest with a positive brand image so that consumers actually *evaluate* it (step 2 of CDJ). To do so, it is vital to educate people about how the service works, for which use cases it is convenient and the benefits it brings along for individuals and environment as well. Consumers need to recognise car sharing as *"a complementary service to public transport not a substitute"* as expert interviewees (2017) emphasise. To outweigh the cons, DriveNow has to be *relevant* in consumer's mobility life. Interview insights reveal several measures for that, starting from

[1]moovel was founded by Daimler and is currently available in several European and US cities. In one app, one can search, book and pay for different transport modes used on their own or combined. See *https://moovel-group.com/en.*

enhancing the availability of car sharing in Lisbon by increasing the fleet, the business area and including all residential areas within it. Besides, preferred parking areas exclusively for car sharing cars are recommended to be introduced by the afore-mentioned car sharing law, since *"the more parking areas DriveNow can use, the more does the relevancy of its service increase – for the inhabitants in the city, and with that, the greater the environmental implications as well, in terms of both solving parking issues and private car reduction"* (Expert Interviews 2017). This way, car sharing can indeed convince consumers to see it as a solution to their daily transportation needs, eventually leading them to actually *use* it (step 3 of CDJ).

Once consumers sit behind the steering wheel, the final critical phase kicks-in: Does the consumer truly *enjoy* the service? This does not only concern the actual driving phase but every touchpoint before and after getting into the car. They include the initial registration process being as simple and convenient as possible, as well as every other interaction taking place through the app – finding a car, reserving, unlocking and locking it – thereby delivering a user-friendly and seamless experience from the digital (app) to the physical product (car). Once again, easy parking is a critical factor with considerable room for improvement since parking permits need to include all residential areas within DriveNow's business area, which is the responsibility of the city of Lisbon to open up currently prohibited areas to car sharing (Expert Interviews 2017).

The last phase of the journey determines whether consumers proceed to a new round of consideration and evaluation that later might end up against car sharing, or they transfer into the loyalty loop, where they bond with DriveNow (step 4 in CDJ). At this stage, consumers actively stick to sustainable mobility by car sharing, potentially substituting their private cars and eventually giving up car ownership completely. Ultimately, the beneficial implications on an economic, environmental and social level, depend on the public policy of Lisbon, which will determine the mix of public transport and shared services as well as the efficacy of the city's mobility ecosystem.

A last key recommendation to accelerate environmental benefits is the boost of e-mobility in Lisbon. DriveNow may have the pivotal role in powering an electric car breakthrough by increasing the share

of i3 – up to 100%. Taking Copenhagen as example, where DriveNow operates a fully electric, zero-emission fleet, Lisbon could follow soon, however, *"if and only if there is an appropriate charging infrastructure provided by the city"* (Expert Interviews 2017). Besides implementing the outlined recommendations, it strongly depends on Lisbon's citizens how fast they will move throughout their decision journeys and to which extent they will bond with an innovative, shared-fleet service, such as DriveNow – a major challenge considering their high appreciation and attachment to private ownership as Portuguese interviewees (Customer Interviews 2017) point out. One thing for sure, Lisbon has several challenges to overcome until car sharing actually advances to a mature stage in the long-term so that its beneficial effects on mobility, society and environment can kick in as soon as possible.

6 Conclusion, Limitations and Future Research Suggestions

Having in mind that Lisbon needs to take on urban mobility challenges, the thesis introduces car sharing with DriveNow as an innovative and technology-driven service to enhance the city's mobility ecosystem. Thereby, it offers consumers a sustainable transport choice and cities a promising mechanism for achieving the goal of decreasing private car ownership and travel and its negative side effects, above all traffic and parking congestions as well as air and noise pollution. As mentioned, several studies provide evidence that car sharing indeed reduces motorized mobility in cities, while simultaneously increasing intermodal travel and greater usage of alternative means such as public transport, bicycling and walking.

The thesis provides qualitative insights into car sharing in Lisbon, however, due to its scope, quantitative follow-up research is recommended to overcome this limitation. Thus, Lisbon-specific studies on car sharing including quantitative research methods could cross-validate the results reported in other cities. Moreover, conducting in-depth interviews with experts from DriveNow only carries the risk of the interviewees being biased in favour of their own company. Thus, the perspective of Lisbon city should be incorporated in future work as well. Future research could also analyse in-depth the explicit motivation factors leading consumers to use car sharing, namely fees, choice of vehicles, and types of trips among others, and likewise, address consumers' constraints to car sharing. Furthermore,

despite the exclusive investigation of car sharing, other innovative mobility solutions, such as ride sharing services like Uber, bike and scooter sharing, are emerging and might reduce a city's mobility burdens likewise. Looking into the future, autonomous driving vehicles will have a major impact on car sharing services and, once on the roads, immensely disrupt urban mobility systems. Single studies on that aspect already exist, however, presents tremendous potential for further research.

Since car sharing is still on an early-adoption stage in Lisbon, it has several challenges to face before the outlined implications actually take place. Nonetheless, it is hoped that DriveNow together with the city's public policy will be able to spread the acceptance of car sharing among Lisbon citizens. Eventually it will be able to make a positive contribution to the existing mobility burdens. Acting today will secure a better urban mobility system in the future.

7 References

Barra, Mary. 2017. "The Next Revolution in the Auto Industry." *World Economic Forum*. January 21. https://www.weforum.org/agenda/2016/01/the-next-revolution-in-the-car-industry/ (accessed November 27, 2017).

BCS - Bundesverband CarSharing. 2017. "CarSharing in Germany." https://carsharing.de/alles-ueber-carsharing/carsharing-zahlen/aktuelle-zahlen-daten-zum-carsharing-deutschland. (accessed November 3, 2017).

Becker, Henrik, Francesco Ciari, and Kay W Axhausen. 2017. "Comparing Car-Sharing Schemes in Switzerland: User Groups and Usage Patterns." *Transportation Research Part A* 97. Elsevier Ltd: 17–29. doi:10.1016/j.tra.2017.01.004.

Beiker, Sven, Fredrik Hansson, Anders Suneson, and Michael Uhl. 2016. "How the Convergence of Automotive and Tech Will Create a New Ecosystem." *McKinsey & Company*. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/how-the-convergence-of-automotive-and-tech-will-create-a-new-ecosystem (accessed November 11, 2017).

Bert, Julien, Brian Collie, Marco Gerrits, and Gang Xu. 2016. "What's Ahead for Car Sharing?." *The Boston Consulting Group*. https://www.bcg.com/publications/2016/automotive-whats-ahead-car-sharing-new-mobility-its-impact-vehicle-sales.aspx. (accessed November 14, 2017).

BMW Group. 2011. "BMW Group and Sixt AG Establish DriveNow Joint Venture for Premium Car Sharing." BMW Group. March 21. https://www.press.bmwgroup.com/global/article/detail/T0100973EN/bmw-group-and-sixt-ag-establish-drivenow-joint-venture-for-premium-car-sharing?language=en (accessed November 44, 2017).

Bouton, Shannon, Stefan M Knupfer, Ivan Milhov, and Steven Swartz. 2015. "Urban Mobility at a Tipping Point." *McKinsey & Company*. September. https://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/urban-mobility-at-a-tipping-point (accessed November 11, 2017).

Button, Kenneth. 2009. "Social Change and Demand for Mobility." In *Transportation Engineering and Planning, in Encyclopedia of Life Support Systems*, 13–35. Oxford, UK.

Cornet, Andreas, Detlev Mohr, Florian Weig, Benno Zerlin, and Arnt-Philipp Hein. 2012. "Mobility of the Future." *McKinsey & Company*. http://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/automotive%20and%20assembly/pdfs/mobility_of_the_future_brochure.ashx (accessed November 11, 2017).

Correia, Gonçalo H, Diana Ramos Jorge, and David Marques Antunes. 2014. "The Added Value of Accounting for Users' Flexibility and Information on the Potential of a Station-Based One-Way Car-Sharing System: an Application in Lisbon, Portugal." *Journal of Intelligent Transportation Systems* 18 (3): 299–308. doi:10.1080/15472450.2013.836928.

Corwin, Scott, Nick Jameson, Derek M Pankratz, and Philipp Willigmann. 2016. "The Future of Mobility: What's Next?." Deloitte University Press.

Costa, P B, G C Morais Neto, and A I Bertolde. 2017. "Urban Mobility Indexes: a Brief Review of the Literature." *Transportation Research Procedia* 25. Elsevier B.V.: 3645–55. doi:10.1016/j.trpro.2017.05.330.

Court, David, Dave Elzinga, Susan Mulder, and Ole Jørgen Vetvik. 2009. "The Consumer Decision Journey." Edited by McKinsey & Company. *McKinsey Quarterly* 3. https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/the-consumer-decision-journey (accessed November 11, 2017).

Customer Interviews. 2017. Customer Interviews conducted by Eleftheria-Eleni Kapourani. November. Audio records and transcripts. Lisbon.

Deloitte. 2017. "Car Sharing in Europe." *Monitor Deloitte*. https://www2.deloitte.com/de/de/pages/consumer-industrial-products/articles/car-sharing-in-europe.html (accessed November 18, 2017).

Denzin, Norman K. 2012. "Triangulation 2.0 ." *Journal of Mixed Methods Research* 6 (2): 80–88. doi:10.1177/1558689812437186.

DriveNow. 2017a. “2016 in Review: DriveNow Remains on Course for Success .” Drive-Now.com. https://www.drive-now.com/de/en/press (accessed November 4, 2017).

DriveNow. 2017b. “DriveNow Welcomes Car Sharing Law in Germany.” Drive-Now.com. https://www.drive-now.com/de/en/press (accessed November 4, 2017).

DriveNow. 2017c. “DriveNow Launches Car Sharing Service in Lisbon.” Drive-Now.com. https://www.drive-now.com/de/en/press. (accessed November 4, 2017).

DriveNow. 2017d. “Eine Million Kunden – DriveNow Feiert Meilenstein .” Drive-Now.com. https://www.drive-now.com/de/en/press (accessed November 4, 2017).

DriveNow. 2017e. “Factsheet DriveNow.” Drive-Now.com. https://www.drive-now.com/de/en/press (accessed December 18, 2017).

Edelman, David, and Marc Singer. 2015. “Competing on Customer Journeys.” *Harvard Business Review*. November 15. https://hbr.org/2015/11/competing-on-customer-journeys (accessed November 28, 2017).

European Commission. 2006. “Keep Europe Moving - Sustainable Mobility for Our Continent.” Brussels. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52006DC0314 (accessed November 18, 2017).

European Commission. 2013. “Together Towards Competitive and Resource-Efficient Urban Mobility.” December, 1–13. https://ec.europa.eu/transport/sites/transport/files/themes/urban/doc/ump/com%282013%29913_en.pdf (accessed November 18, 2017).

Eurostat. 2015. “Passenger cars, by age. (Portugal)”. Eurostat. http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=road_eqs_carage&lang=en (accessed November 27, 2017).

Expert Interviews. 2017. Expert Interviews conducted and translated by Eleftheria-Eleni Kapourani. November. Audio records and transcripts. Lisbon / Munich.

Frost & Sullivan. 2014a. *Number of car sharing users in Europe in 2014, by country*. Statista. https://fesrvsd.fe.unl.pt:2351/statistics/415263/car-sharing-users-in-europe-by-country/ (accessed November 13, 2017).

Frost & Sullivan.2014b. *Number of car sharing vehicles in Europe in 2014, by country*. Statista. https://fesrvsd.fe.unl.pt:2351/statistics/415280/car-sharing-vehicles-in-europe-by-country/ (accessed November 13, 2017).

Gao, Paul, Hans-Werner Kaas, Detlev Mohr, and Dominik Wee. 2016. “Automotive Revolution – Perspective Towards 2030.” *McKinsey & Company*. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/disruptive-trends-that-will-transform-the-auto-industry (accessed November 11, 2017).

Grosse-Ophoff, Anne, Saskia Hausler, Kersten Heineke, and Timo Möller. 2017. “How Shared Mobility Will Change the Automotive Industry.” *McKinsey & Company*. April. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/how-shared-mobility-will-change-the-automotive-industry (accessed November 11, 2017).

Hamari, Juho, Mimmi Sjöklint, and Antti Ukkonen. 2015. “The Sharing Economy: Why People Participate in Collaborative Consumption.” *Journal of the Association for Information Science and Technology* 67 (9): 2047–59. doi:10.1002/asi.23552.

Hills, Peter J. 1996. “What Is Induced Traffic?.” *Transportation* 23 (1): 5–16.

ITF - International Transport Forum. 2015a. “Urban Mobility System Upgrade.” OECD. https://www.itf-oecd.org/urban-mobility-system-upgrade-1 (accessed October 10, 2017).

ITF - International Transport Forum. 2015b. “A New Paradigm for Urban Mobility.” OECD. https://www.itf-oecd.org/new-paradigm-urban-mobility (accessed October 10, 2017).

Jackiva, Irina Yatskiv, and Evelina Budilovich. 2017. “A Comprehensive Analysis of the Planned Multimodal Public Transportation HUB.” *Transportation Research Procedia* 24. Elsevier B.V.: 50–57. doi:10.1016/j.trpro.2017.05.067.

Katzev, Richard. 2003. "Car Sharing: a New Approach to Urban Transportation Problems." *Analyses of Social Issues and Public Policy* 3 (1): 65–86. doi:10.1111/j.1530-2415.2003.00015.x.

Kim, W Chan, and Renée Mauborgne. 2004. "Blue Ocean Strategy." *Harvard Business Review* 82 (10). Harvard Business School Publication Corp.: 76–84.

Kim, W Chan, and Renée Mauborgne. 2015a. "Blue Ocean Strategy: From Theory to Practice." *California Management Review* 47 (3). California Management Review: 105–21.

Kim, W Chan, and Renée Mauborgne. 2015b. *Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant*. Boston, MA: Harvard Business Review Press.

Le Vine, Scott, Alireza Zolfaghari, and John Polak. 2014. "Carsharing: Evolution, Challenges and Opportunities." *ACEA Scientifc Advisory Group Reports*. ACEA - Association des Constructeurs Européens d'Automobiles. http://www.acea.be/uploads/publications/SAG_Report_-_Car_Sharing.pdf. (accessed November 10, 2017).

Li, Qingquan, Tong Zhang, Handong Wang, and Zhe Zeng. 2011. "Dynamic Accessibility Mapping Using Floating Car Data: a Network-Constrained Density Estimation Approach." *Journal of Transport Geography* 19 (3). Elsevier Ltd: 379–93. doi:10.1016/j.jtrangeo.2010.07.003.

Litman, Todd. 2003. "Measuring Transportation: Traffic, Mobility and Accessibility ." *Institute of Transportation Engineers. ITE Journal* 73 (10). Institute of Transportation Engineers : 28–32.

Litman, Todd. 2012. "Current Mobility Trends – Implications for Sustainability." In *Keep Moving, Towards Sustainable Mobility*, edited by Ben van Wee, 23–44. Eleven International Pub.

Litman, Todd. 2013. "The New Transportation Planning Paradigm ." *Institute of Transportation Engineers. ITE Journal* 83 (6). Institute of Transportation Engineers : 20–28.

Litman, Todd. 2017. "Generated Traffic: Implications for Transport Planning." *Victoria Transport Policy Institute*, July. Institute of Transportation Engineers.

Loose, Willi. 2010. "The State of European Car-Sharing." Bundesverband CarSharing e. V. https://ec.europa.eu/energy/intelligent/projects/en/projects/momo-car-sharing (accessed November 18, 2017).

Loucks, Jeff, James Macaulay, Andy Noronha, and Michael Wade. 2016. *Digital Vortex*. Lausanne, Switzerland: International Institute for Management Development.

Macário, Rosário. 2011. *Managing Urban Mobility Systems*. 1st ed. Bradford: Emerald Group Publishing Limited.

McKinsey. 2016. "Urban Mobility 2030: How Cities Can Realize the Economic Effects." *McKinsey & Company*. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/urban-mobility-2030-berlin (accessed November 11, 2017).

Millard-Ball, Adam, Gail Murray, Jessica Ter Schure, Christine Fox, and Jon Burkhardt. 2005. "Car-Sharing: Where and How It Succeeds." 108. *Transit Cooperative Research Program*. Washington, DC.

Oliveira, Ana Batalha, and Paula Nunes. 2017. "Ter 501 Carros Sem Ter Nenhum E Um Telemóvel Em Vez Da Chave. O Carsharing Espalha-Se Por Lisboa." *Eco.Pt*. September 3. https://eco.pt/reportagem/🎬-ter-501-carros-sem-ter-nenhum-e-um-telemovel-em-vez-da-chave-o-carsharing-espalha-se-por-lisboa/ (accessed November 21, 2017).

Patton, M Q. 1999. "Enhancing the Quality and Credibility of Qualitative Analysis." *Health Services Research* 34 (5 Pt 2): 1189–1208.

Rodrigue, Jean-Paul, Claude Comtois, and Brian Slack. 2017. *The Geography of Transport Systems*. 4 ed. New York: Routledge.

Sager, Tore. 2006. "Freedom as Mobility: Implications of the Distinction Between Actual and Potential Travelling." *Mobilities* 1 (3): 465–88. doi:10.1080/17450100600902420.

Saunders, Mark, Philip Lewis, and Adrian Thornhill. 2009. *Research Methods for Business Students*. Pearson Education.

Shaheen, Susan A, and Adam P Cohen. 2007. "Growth in Worldwide Carsharing: an International Comparison." *Transportation Research Record: Journal of the Transportation Research Board* 1992 (January): 81–89. doi:10.3141/1992-10.

Shaheen, Susan A, and Adam P Cohen. 2013. "Carsharing and Personal Vehicle Services: Worldwide Market Developments and Emerging Trends." *International Journal of Sustainable Transportation* 7 (1): 5–34. doi:10.1080/15568318.2012.660103.

Slavin, Terry. 2000. "The Motown Missionary." *The Guardian*. November 12. https://www.theguardian.com/business/2000/nov/12/theobserver.observerbusiness7 (accessed November 23, 2017).

team red Deutschland GmbH. 2017. "Endbericht Evaluation CarSharing (EVA-CS) München." Edited by Schreier, Hannes, Udo Becker, and Jochen Heller. https://www.muenchen-transparent.de/dokumente/3885730 (accessed December 3, 2017).

Tuominen, Anu, Heikki Kanner, and Eeva Linkama. 2012. "A Paradigm Shift in European Transport and Urban Planning -Fact or Fable?." *Procedia - Social and Behavioral Sciences* 48. Elsevier B.V.: 1415–23. doi:10.1016/j.sbspro.2012.06.1117.

UN Habitat. 2017. "Mobility." *UN Habitat*. https://unhabitat.org/urban-themes/mobility/ (accessed November 13, 2017).

UNPF - United Nations Population Fund. 2007. "State of World Population 2007." Edited by Alex Marshall. New York, NY: United Nations Population Fund. http://www.unfpa.org/publications/state-world-population-2007. (accessed November 13, 2017).

Van Audenhove, Francois-Joseph, Laurent Dauby, Oleksii Korniichuk, and Jerome Pourbaix. 2014. "The Future of Urban Mobility 2.0." Arthur D. Little. http://www.adlittle.com/en/insights/viewpoints/future-urban-mobility-20-—-full-study (accessed November 3, 2017).

Willing, Christoph, Tobias Brandt, and Dirk Neumann. 2017. "Intermodal Mobility." *Business & Information Systems Engineering* 59 (3). Springer Fachmedien Wiesbaden: 173–79. doi:10.1007/s12599-017-0471-7.

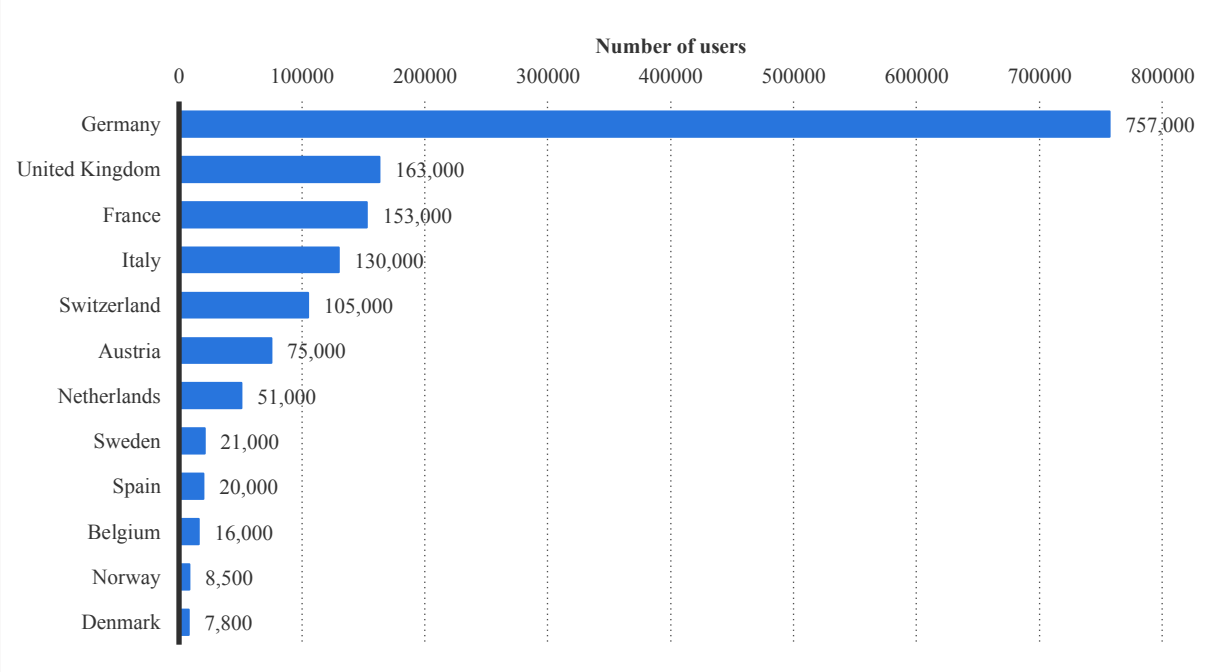
WiMobil. 2016. "Wirkung Von E-Car Sharing Systemen Auf Mobilität Und Umwelt in Urbanen Räumen ." Germany: Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit. http://erneuerbar-mobil.de/projekte/wimobil. (accessed November 4, 2017).

Yin, Robert K. 2003. "Case Study Research: Design and Methods." *Applied Social Research Methods Series: 5*. 3rd ed.

Appendices

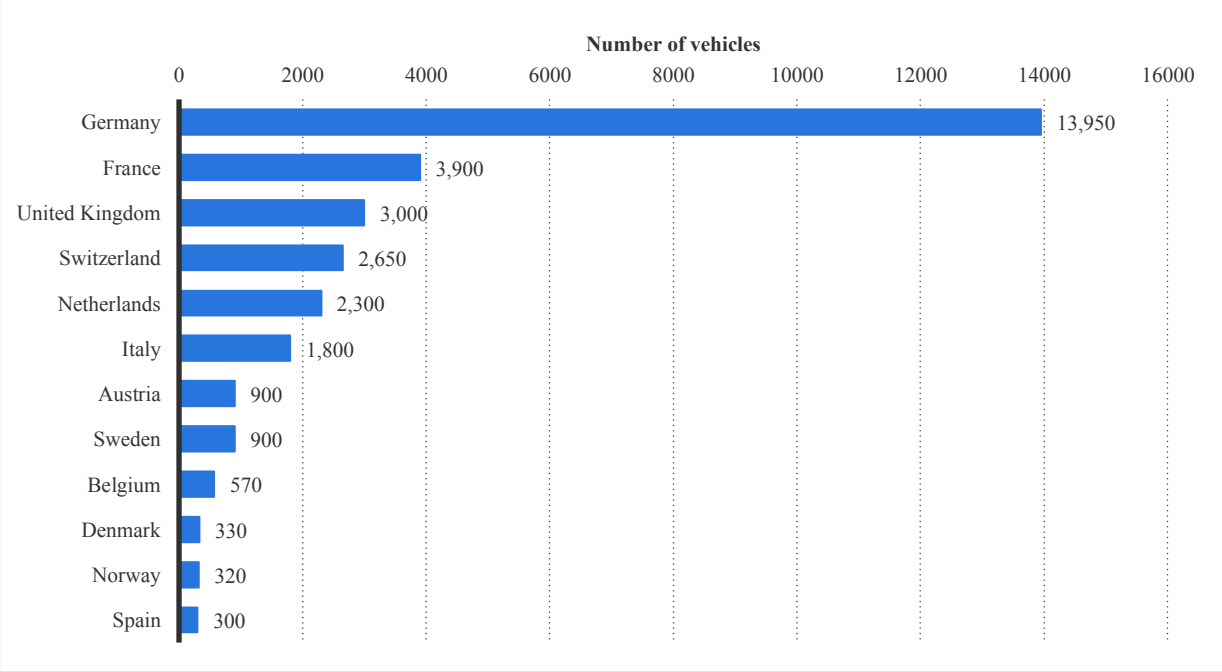
Appendix 1 | Car Sharing with Varying Adoption throughout Europe

Appendix 1.1 | Number of Car Sharing Users in Europe in 2014, by Country



Source: Frost & Sullivan. 2014a. *Number of car sharing users in Europe in 2014, by country*. Statista. https://fesrvsd.fe.unl.pt:2351/statistics/415263/car-sharing-users-in-europe-by-country/ (accessed November 13, 2017).

Appendix 1.2 | Number of Car Sharing Vehicles in Europe in 2014, by Country

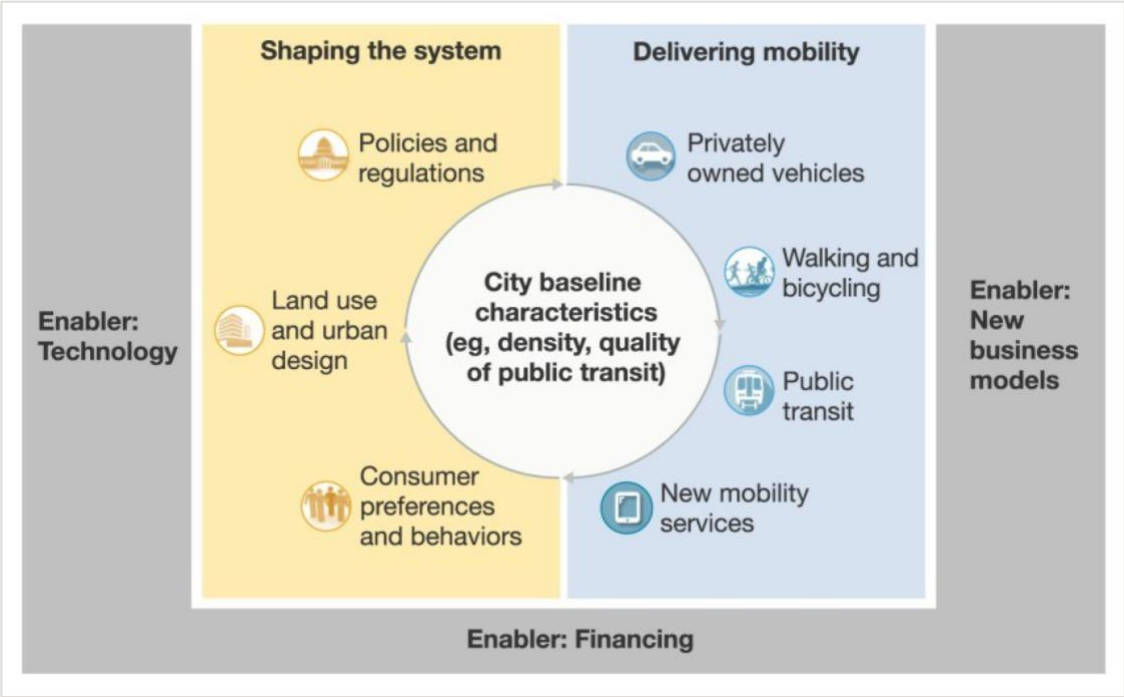


Source: Frost & Sullivan.2014b. *Number of car sharing vehicles in Europe in 2014, by country*. Statista. https://fesrvsd.fe.unl.pt:2351/statistics/415280/car-sharing-vehicles-in-europe-by-country/ (accessed November 13, 2017).

Appendix 2 | Urban Mobility

Appendix 2.1 | A Framework for Understanding Urban Mobility

A city's urban mobility is a complex system to grasp. The following framework developed by McKinsey (Bouton et al. 2015) helps understand the underlying forces as well their enables. It illustrates that urban mobility evolves from the interconnections of the single elements generating numerous cause-and-effect relationships and implications on social, economic and environmental levels.



Source: Bouton, Shannon, Stefan M Knupfer, Ivan Milhov, and Steven Swartz. 2015. "Urban Mobility at a Tipping Point." *McKinsey & Company*. September. https://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/urban-mobility-at-a-tipping-point (accessed November 11, 2017).

Appendix 2.2 | The Paradigm Shift

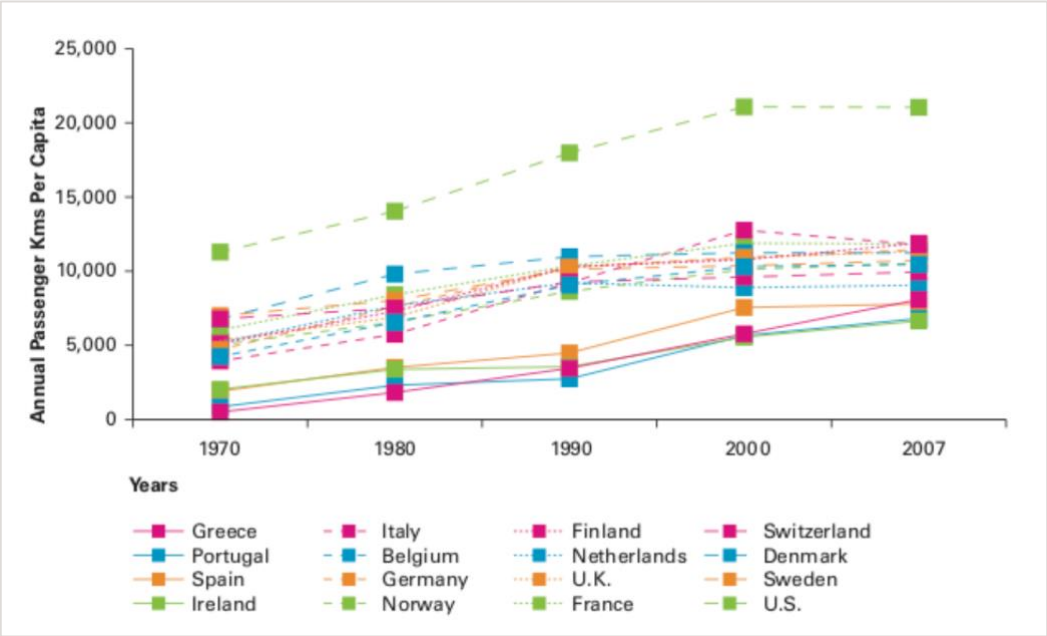
The following figure compares the old and new paradigm. Latter is also considered as *sustainable* transport planning.

	Old Paradigm	New Paradigm
Definition of Transportation	*Mobility* (physical travel).	*Accessibility* (people's overall ability to reach services and activities).
Modes considered	Mainly automobile.	Multimodal: Walking, cycling, public transport, automobile, telecommunications, and delivery services.
Planning objectives	Congestion reduction; roadway cost savings; vehicle cost savings; and reduced crash and emission rates per vehicle-kilometer.	Congestion reduction; road and parking cost savings; consumer savings and affordability; improved access for disadvantaged people; reduced crash, energy consumption and emission rates per capita; improved public fitness and health; strategic land use objectives (reduced sprawl).
Impacts considered	Travel speeds and congestion delays; vehicle operating costs and fares; and crash and emission rates.	A variety of economic, social, and environmental impacts, including indirect impacts.
Performance indicators	Vehicle traffic speeds, roadway level of service, and distance-based crash and emission rates.	Multimodal level of service; multifaceted accessibility modeling, which calculates the time, monetary costs, comfort, safety, security, and environmental impacts required to access services and activities.
Favored transport improvement options	Roadway capacity expansion.	Improve transport options (walking, cycling, public transit, etc.); transportation demand management; pricing reforms; and more accessible land development.
Planning scope	Limited; transport planning is separated from other planning issues.	Integrated and strategic planning; individual, short-term decisions should support strategic, long-term planning goals.
The new paradigm expands the range of modes, objectives, impacts, and options considered in planning.		

Source: Litman, Todd. 2013. "The New Transportation Planning Paradigm ." *Institute of Transportation Engineers. ITE Journal* 83 (6). Institute of Transportation Engineers : 20–28.

Appendix 2.3 | Car-based Mobility: International Vehicle Travel Trends

The figure illustrates the development of per capita vehicle travel in selected countries since the 1970s. Rapid growth is shown between 1970 to 1990, however, has since levelled off and is on a much lower level in European countries than in the United States. Litman (2012) explains the slow-down trend being driven by various demographic and economic trends, including aging populations, increasing urbanization, rising fuel prices, growing health and environmental concerns, and changing consumer preferences.

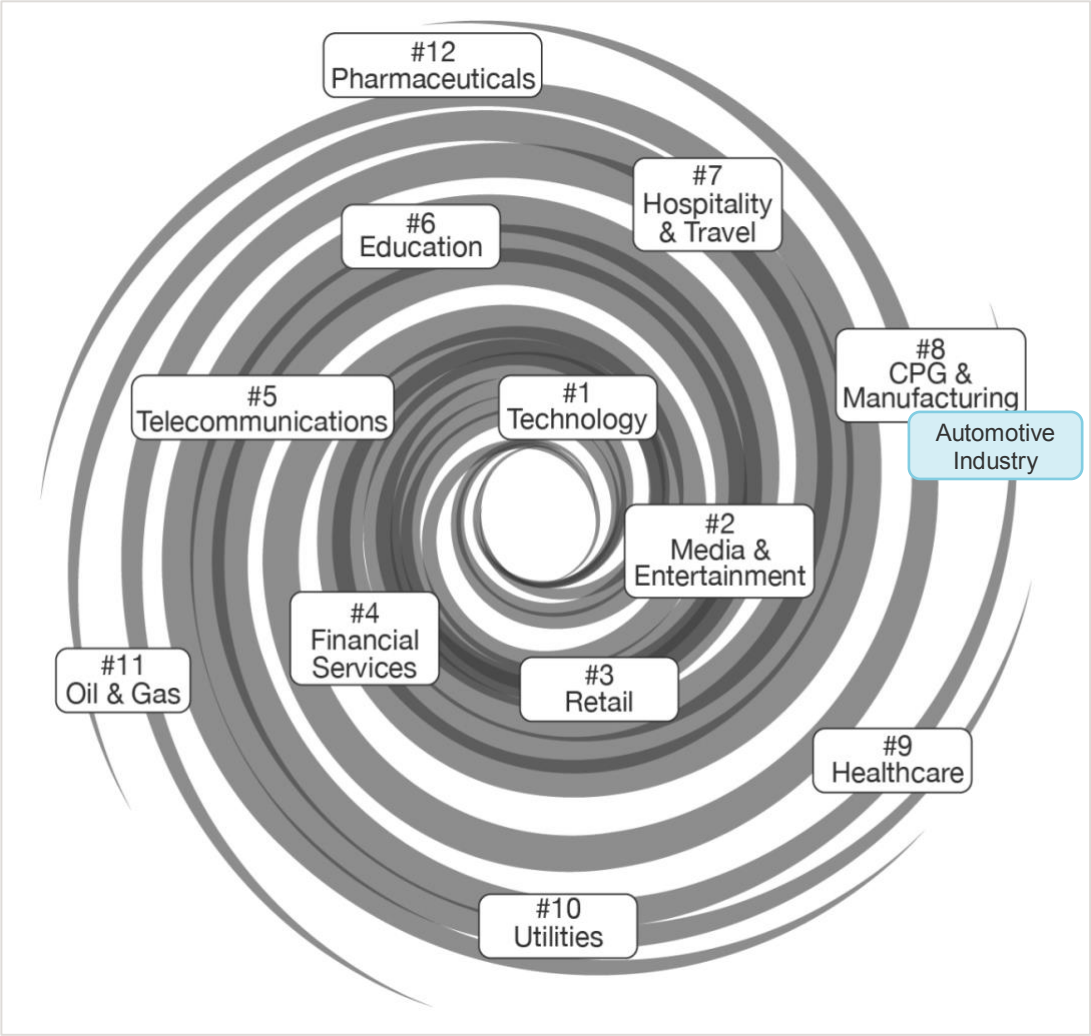


Source: Litman, Todd. 2012. "Current Mobility Trends – Implications for Sustainability." In *Keep Moving, Towards Sustainable Mobility*, edited by Ben van Wee, 23–44. Eleven International Pub.

Appendix 3 | Automotive at the Edge of Disruption

Appendix 3.1 | The Digital Vortex: Digital Disruption per Industry

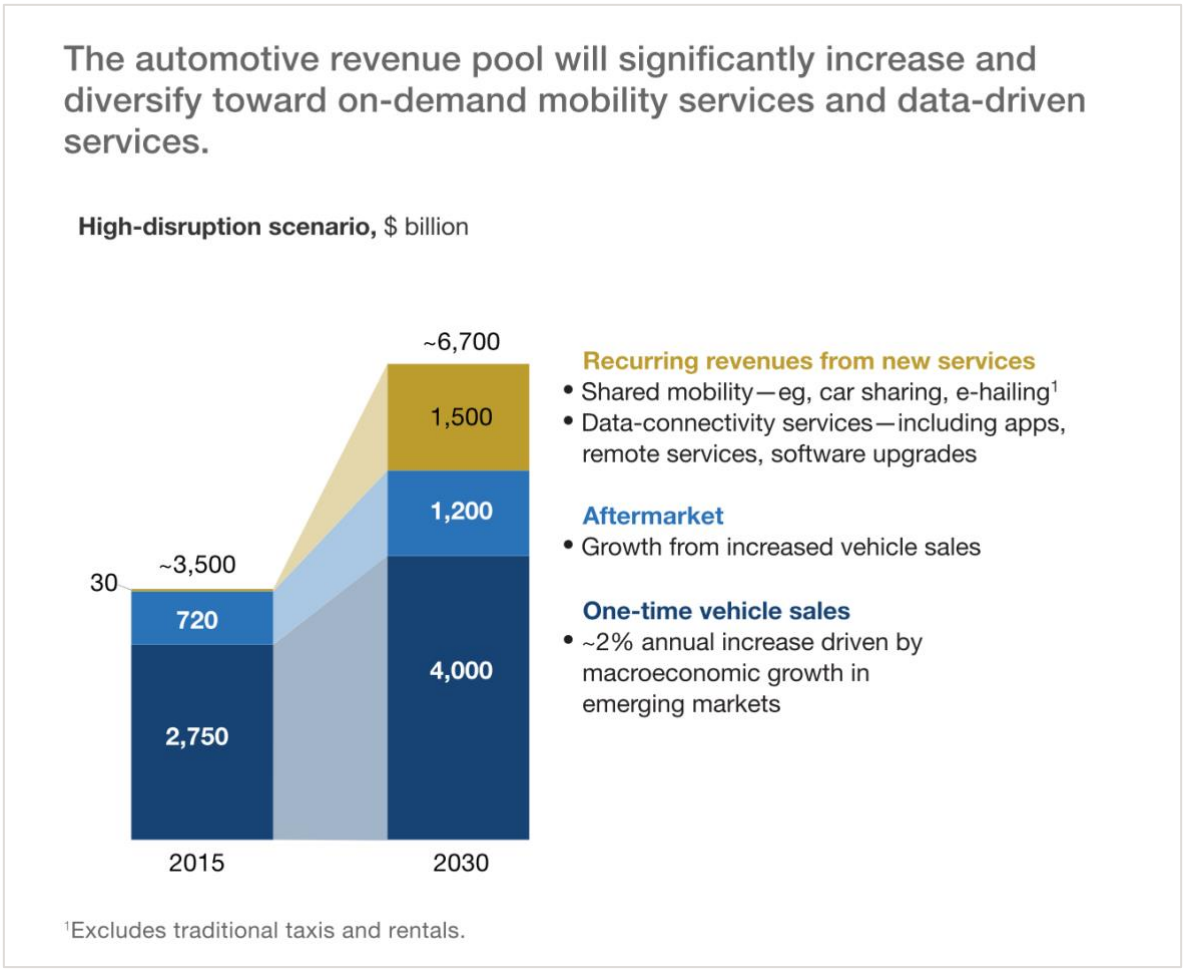
The Digital Vortex "predicts the extent of digital disruption by industry. The industries poised for greatest disruption are those in which the most digitization is occurring. Those on the periphery are less vulnerable to disruption, and may enjoy greater insularity." (Loucks et al. 2016, 18) The automotive industry sits near the outer edge of the Digital Vortex (within the manufacturing sector), hence, with a position of at least relative safety compared to the industries located in the vortex's centre. Nonetheless, autonomous cars will have huge impacts reaching beyond the core automotive industry, such as insurance, financial services, media and entertainment – just to mention a few.



Source: Loucks, Jeff, James Macaulay, Andy Noronha, and Michael Wade. 2016. *Digital Vortex*. Lausanne, Switzerland: International Institute for Management Development.

Appendix 3.2 | Disruption Scenario of Automotive

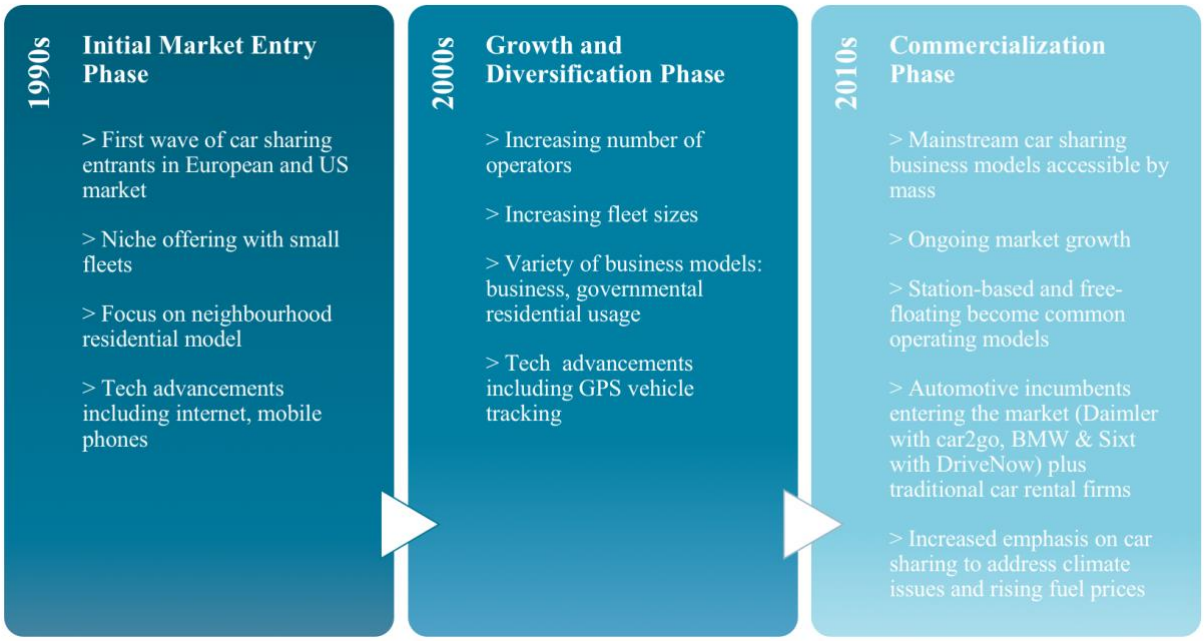
McKinsey sees the automotive revenue streams expanding by about 30 percent in 2030 as well as increasingly diversifying due to new business models being driven by shared mobility, connectivity services, and feature upgrades (Gao et al. 2016, 6).



Source: Gao, Paul, Hans-Werner Kaas, Detlev Mohr, and Dominik Wee. 2016. "Automotive Revolution – Perspective Towards 2030." *McKinsey & Company*. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/disruptive-trends-that-will-transform-the-auto-industry (accessed November 11, 2017).

Appendix 4 | Car Sharing in Detail

Appendix 4.1 | The Evolution of Car Sharing



Source: Author's representation based on Shaheen and Cohen 2007; Correia, Jorge, and Antunes 2014; Millard-Ball et al. 2005; Katzev 2003.

Appendix 4.2 | Comparison of Car Sharing with other Mobility Services

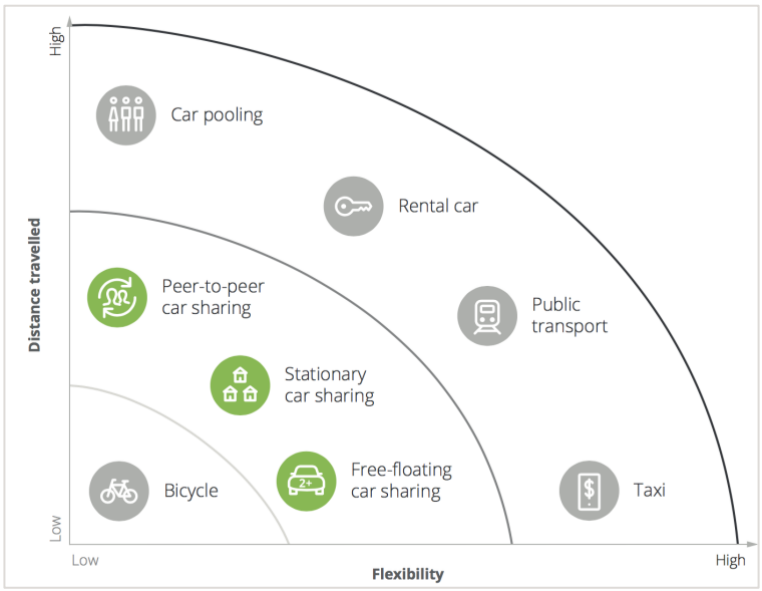
To better understand the car sharing concept, a comparison to similar, yet different, mobility services is advisable. *Table A4.2* presents the definitions of main innovative services based on shared vehicles, while *Figure A4.2* puts them in relation to each other depending on the flexibility given and a reasonable travel distance.

Table A4.2 | Definitions of mobility services with shared vehicles

Model	Description[1]	Company Examples[2]
Car Rental	Traditional ***car rental*** offers car primarily for short-term rentals of a few days. Their fleets are located typically in city centres or nearby stations and airports. Access is most often limited to operating hours, although many offer 24/7h service. Key difference to car sharing is that the usual pricing models are based on daily rates and fuel and insurance is paid in addition to the rental fee.	Sixt, Hertz, Europe Car, Avis, and more
Ride Sharing / Carpooling	***Ride sharing***, often also named *carpooling*, is another service gaining more and more popularity. It refers to drivers offering one or more of their free seats in their vehicle to other (unknown) passengers. There is a distinction between private and commercial operating models. Uber has been one of the first companies coining the term. Businesses alike provide a technical platform and a "virtual" fleet of cars with private drivers that offer a ride to individual customers similar to taxi services.	*Private:* Bla Bla Car *Commercial*: Uber, Lyft
Peer-to-peer car sharing	***Peer-to-peer (P2P) car sharing*** is very similar to mainstream commercial car sharing, however, it involves private car owners offering their vehicle to others for short-term rentals. In contrast to regular car sharing operators being actual organizations with their own car sharing fleet, P2P builds on person-to-person lending of a fleet consisting of private vehicles from participating car owners. They are able to make small money by renting out their cars when they are not in use. Businesses with this model provide only a technical platform (e.g. website, mobile app) that brings both parties together and manages the rental process from reservation to payment.	Getaround (US only), Croove, Autonetzer, Drivy

Sources: [1]Deloitte 2017, [2] Company websites (accessed November, 2017)

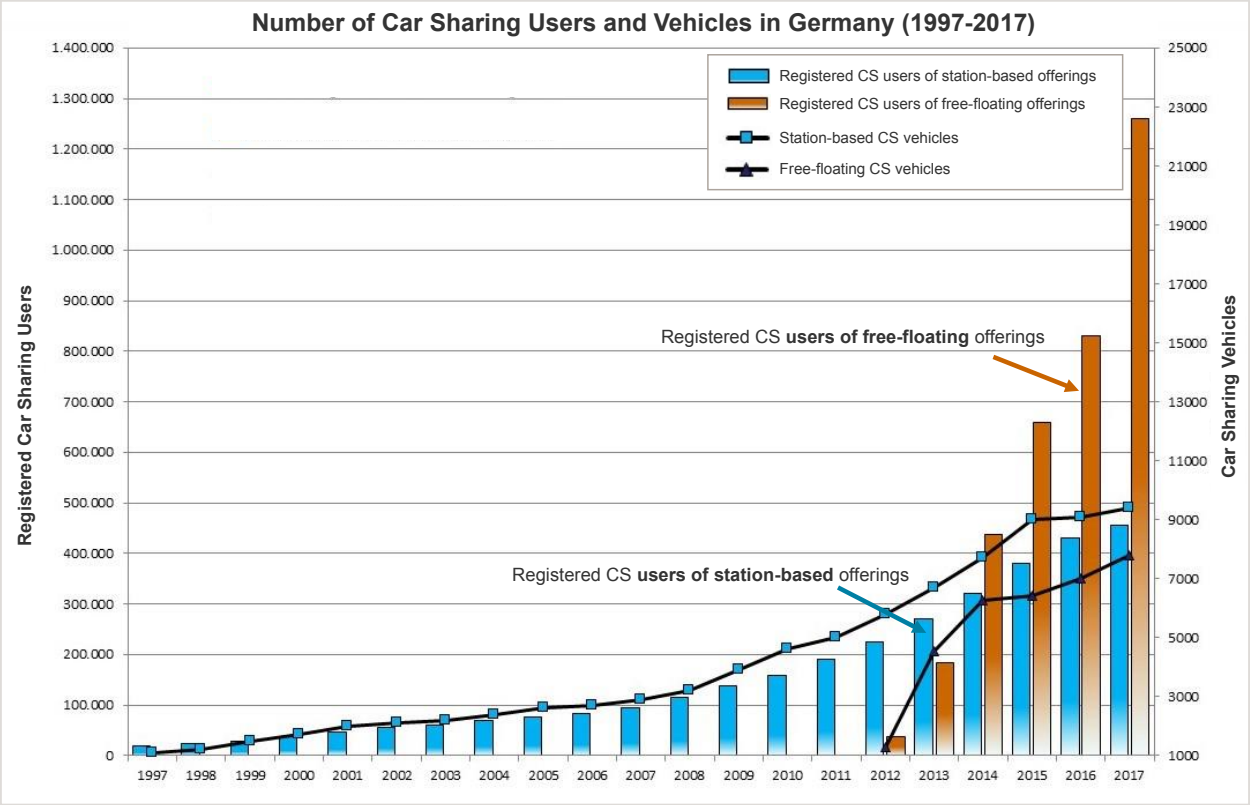
Figure A4.2 | Classification of mobility services



Source: Deloitte. 2017. "Car Sharing in Europe." *Monitor Deloitte*. https://www2.deloitte.com/de/de/pages/consumer-industrial-products/articles/car-sharing-in-europe.html (accessed November 18, 2017).

Appendix 4.3 | Free-floating versus Station-based Car Sharing

The number of registered users in the subsequent chart illustrates the increased acceptance of free-floating car sharing compared to station-based. Despite the major divergence in number of users, the number of station-based vehicles still exceeds the free-floating ones. Reason for that is the increased flexibility of free-floating cars and short-distance travel within urban centres, which results in a higher frequency of drives per day. In contrast, station-based vehicles are used for relatively longer travel distances (e.g. for day-long excursions or weekend trips), thereby restricting their availability to other users (BCS 2017). Thus, one free-floating vehicle accommodates up to 173 users, while station-based counts maximally 50 users per vehicle.



Source: BCS - Bundesverband CarSharing. 2017. "CarSharing in Germany." https://carsharing.de/alles-ueber-carsharing/carsharing-zahlen/aktuelle-zahlen-daten-zum-carsharing-deutschland. (accessed November 3, 2017).

Appendix 4.4 | Selected Car Sharing Operators in Europe

Company Name	Parent Company	Countries served	Size (Members & Fleet)	Launch Year	Car Sharing Model
DriveNow	Joint Venture by BMW Group and Sixt SE	DE, AT, UK, DK, SE, BE, IT, FI, PT	>1,000,000 6,250	2011	Free-floating
Car2Go	Daimler AG	DE, AT, IT, NL, ES, US, CA, CH	>1.6M in EU (>2.9M in total) >14,000	2008	Free-floating
Zipcar	Avis Budget Group, Inc.	DE, BE, ES, FR, TU, UK, US, CA, and more	>1,000,000 >12,000	2000	Free-floating
Enjoy	Eni	IT	n.a. >2000	2013	Free-floating
Cambio	---	DE, BE	>93,000 >2600	2000	Station-based
Hertz 24/7	Hertz Corporation	BE, DE, FR, PT, UK	n.a. n.a.	2008	Station-based
Mobility Carsharing	---	CH	>131,700 > 2,950	1997	Station-based
Flinkster	Deutsche Bahn AG	DE, AT, CH, IT, NL	>300,000 >750 own / 4000 within partner network	2001	Station-based

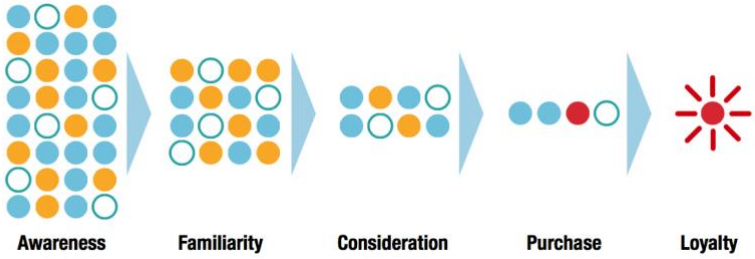
Notes: This list is only an excerpt of major car sharing companies in Europe – without claim to completeness.

Source: Le Vine, Zolfaghari, and Polak 2014; Details from company websites (accessed November, 2017)

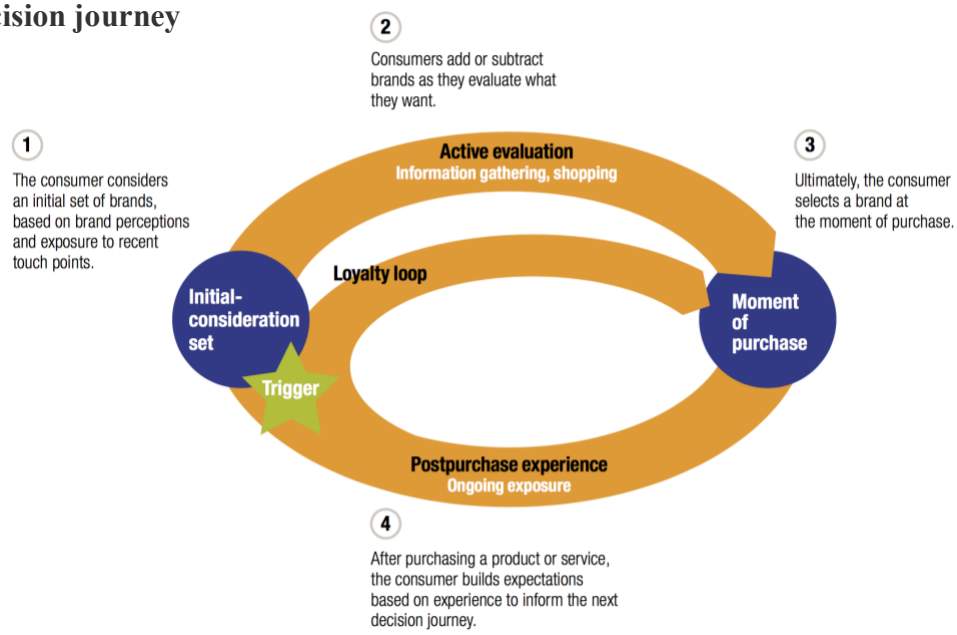
Appendix 5 | The new Consumer Decision Journey

McKinsey revises the ***funnel*** (1) analogy of consumers' decision processes (where "consumers systematically narrow the initial-consideration set as they weigh options, make decisions, and buy products" (Court et al. 2009)) by introducing the circular ***consumer decision journey*** (2) consisting of four essential phases: initial consideration, evaluation stage, purchase, post purchase experience. Latter determines whether consumers are moving to another round of all four steps, or if a brand engaged the consumer with such a strength that s/he truly enjoyed and advocated the experience, thus moving directly to the loyalty loop, where the consumer gets attached to a specific brand. Once in the loyalty loop, consumers taking on a future purchase journey skip the consideration and evaluation phase and directly go for the brand s/he became loyal to. Besides that, crucial difference between both concepts is that the circular journey gives room to consumers, who *expand* their initial consideration set by further potential brands (which they did not think of before) rather than narrowing them down (what happens in the funnel) as they seek information about their purchase options. Hence, the journey concepts reflect consumers of today, with technology enabling them to be well-informed and empowered.

(1) The traditional funnel



(2) The consumer decision journey



Source: Court, David, Dave Elzinga, Susan Mulder, and Ole Jørgen Vetvik. 2009. "The Consumer Decision Journey." Edited by McKinsey & Company. *McKinsey Quarterly* 3. https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/the-consumer-decision-journey (accessed November 11, 2017).

Appendix 6 | DriveNow in Detail

Appendix 6.1 | Overview of DriveNow Markets and Fleets

City	Launch Date	Total Vehicles	Electric Vehicles (thereof)	Business Area
Germany				
Munich	June 9, 2011	750	85	ca. 88 km^2
Berlin	Sept. 29, 2011	1400	140	ca. 167 km^2
Dusseldorf	January 25, 2012	620	45	ca. 152 km^2
Cologne	October 25, 2012			
Hamburg	November 4, 2013	600	150	ca. 90 km^2
Austria				
Vienna	October 17, 2014	700	20	ca. 101 km^2
United Kingdom				
London	December 4, 2014	310	50	ca. 84 km^2
Denmark				
Copenhagen	September 3, 2015	400	400	ca. 89 km^2
Sweden				
Stockholm	October 20, 2015	300	30	ca. 50 km^2
Belgium				
Brussels	July 6, 2016	310	10	ca. 60 km^2
Italy				
Milan	October 19, 2016	500	20	ca. 126 km^2
Finland				
Helsinki	May 24, 2017	150	10	ca. 40 km^2
Portugal				
Lisbon	September 12, 2017	210	10	ca. 48 km^2
Total		**6,250**	**970**	

Source: DriveNow. 2017. “Factsheet DriveNow.” Drive-Now.com. https://www.drive-now.com/de/en/press (accessed December 18, 2017).

Appendix 6.2 | DriveNow Model Mix in Fleets

BMW I3

Electric, sustainable and urban

BMW I3 WITH RANGE EXTENDER

For more range

BMW X1

Compact and versatile

BMW 1 SERIES

Sporty and agile

Spoilt for choice? You could say so! Treat yourself to the right car for any occasion.

BMW 2 SERIES ACTIVE TOURER

For those big plans

BMW 2 SERIES CONVERTIBLE

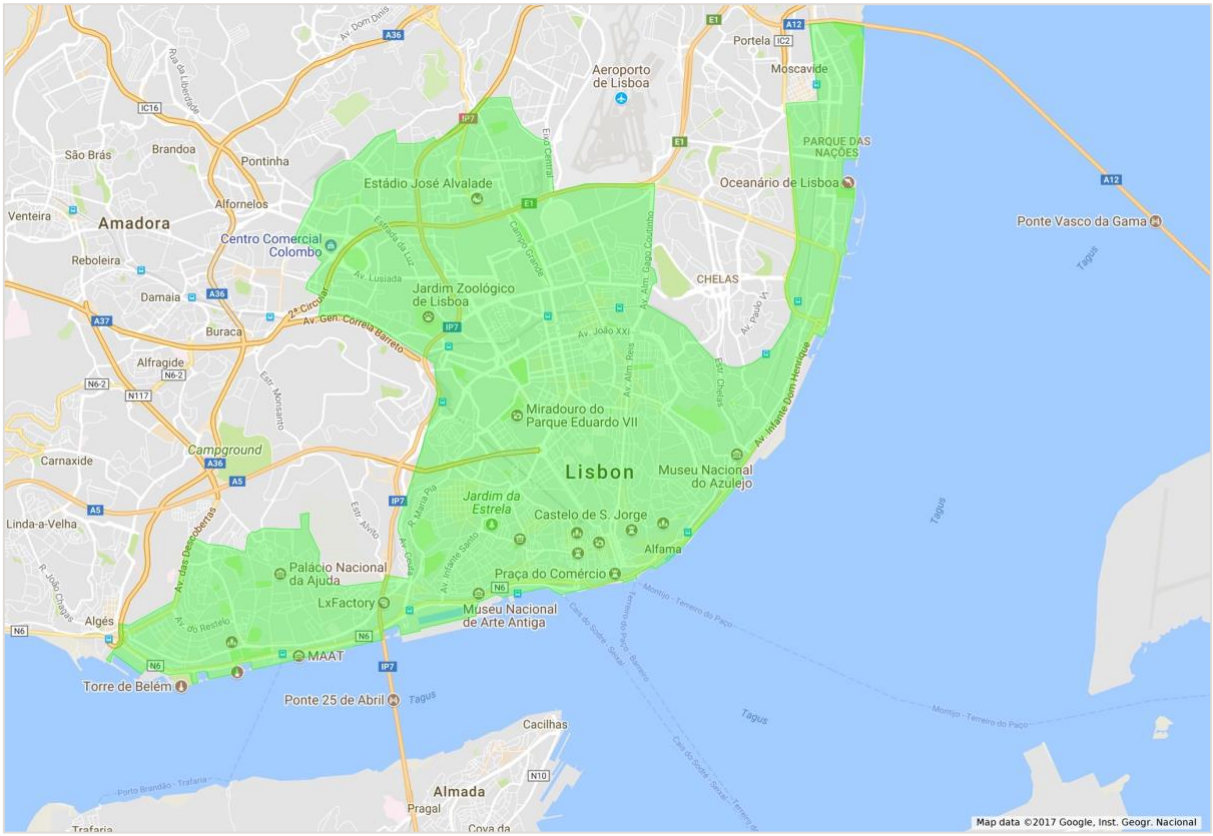
MINI CONVERTIBLE

MINI 3 DOOR

Note: Available model mix varies among cities DriveNow operates in.

Source: DriveNow. 2017. "DriveNow Car Sharing with BMW and MINI." Drive-Now.com. https://www.drive-now.com/de/en/cars (accessed December 18, 2017).

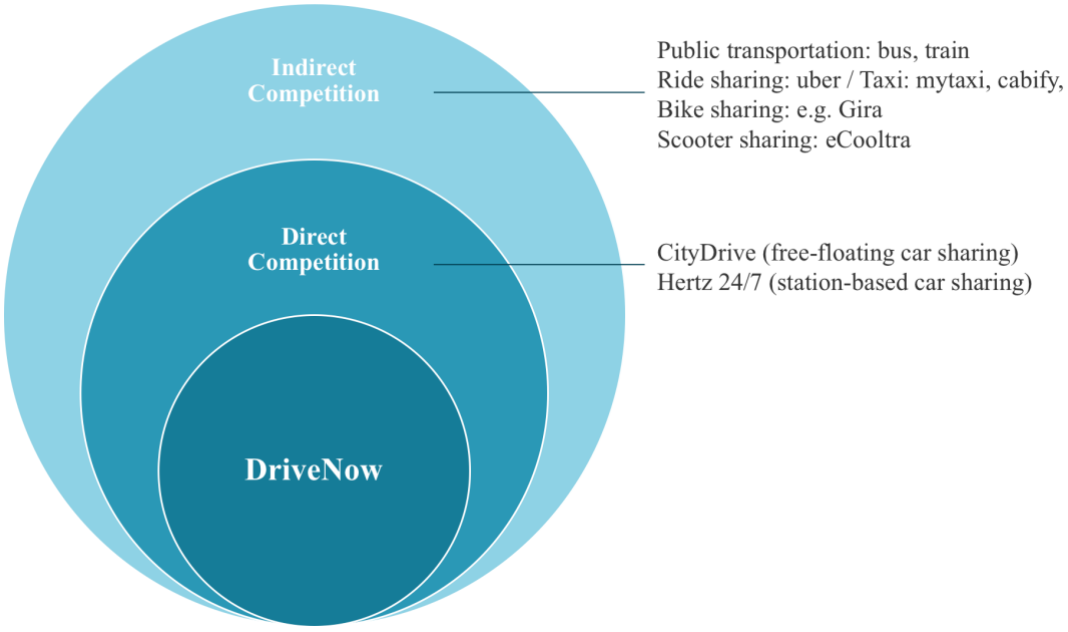
Appendix 6.3 | DriveNow Business Area in Lisbon



Source: DriveNow. 2017. "DriveNow Media Pool: Business Area Lisbon." Drive-Now.com. https://content.drive-now.com/sites/default/files/2017-10/DriveNow_Business_Area_Lisbon.jpg (accessed December 11, 2017).

Appendix 7 | Lisbon's Mobility Ecosystem – DriveNow's Competitive Field

Industry analysis of Lisbon's mobility ecosystem is based on secondary (literature analysis) and primary data (expert and user interviews). Both research methods provided insights into the direct and indirect competitive environment of DriveNow, which are illustrated in the following framework created by the author.

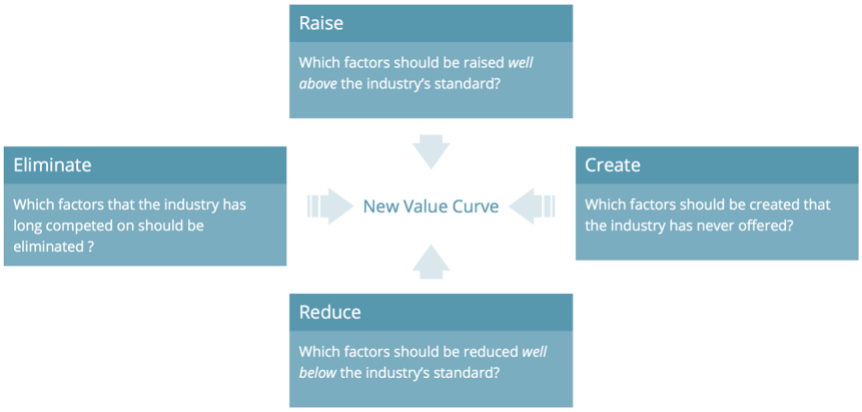


Source: Author's representation.

Appendix 8 | Blue Ocean Frameworks

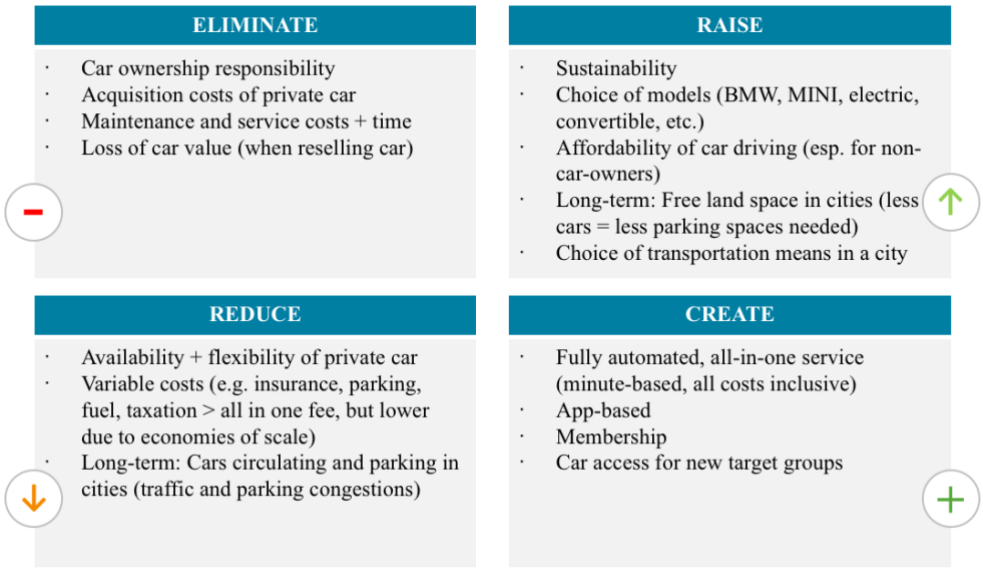
Four Action Framework (*Figure A8.1*) addresses four essential questions to define the value innovation proposition of a company. The questions of eliminating and reducing help identify the low-cost source, while the remaining two of creating and raising illustrate the uplifted value for customers that drives new demand. These questions were addressed within the conducted interviews by the author and documented within a second framework, the *ERRC-Grid* (*Figure A8.2*). It synthesizes how DriveNow is actually acting on all four elements to create a new value curve in contrast to car ownership.

Figure A8.1 | Four Actions Framework



Source: Kim, W Chan, and Renée Mauborgne. 2015. *Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant*. Boston, MA: Harvard Business Review Press. Image retrieved from https://www.blueoceanstrategy.com/tools/four-actions-framework/

Figure A8.2 | ERRC-Grid employed on DriveNow



Source: Author's representation based on interview insights and literature about DriveNow.

Appendix 9 | Interviews

The author of the present thesis conducted the following interviews personally in November 2017. Two groups of interviewees were defined: car sharing experts and car sharing customers. Among the selected experts are DriveNow employees from the headquarters in Munich, as well as a local manager responsible for DriveNow operations in Lisbon. Their areas of expertise are diverse and range from Business Development, Public Relations to Marketing. The second group comprises two students, a car journalist and a business manager, who were interviewed in Lisbon. All interviews were semi-structured and conducted as guided conversations using open-end questions. In the following, the interview guides (*Appendix 9.1*) as well as the final transcripts (*Appendix* 9.2) are presented.

Appendix 9.1 | Interview Guide A) for Experts and B) for Users

Interview Guide A: Car Sharing Experts	
Lisbon market	› Why did you choose Lisbon to enter as new market? Who was involved? (**determining factors, market attractiveness**?) › How would you compare Lisbon to other DriveNow markets? What is **unique** about it? › What are the key **challenges** and difficulties in Lisbon?
Competitors in Lisbon *Customers*	› Which are your **local competitors**? › Why should customers prefer DriveNow to other services like Uber, Taxi, Cabify? › Are you **targeting specific customer groups** in Lisbon? › How would you describe the typical Lisbon car sharing user? › Are there any possible **adoption hurdles** in Lisbon, which and why? › Did you need to **adapt** your service/product to the local market? Which elements? Why?
Implications of FFCS	› Which parts of the customer's **daily mobility/lifestyle** are affected by DriveNow? › Which **implications** does in particular **free-floating** car sharing (FFCS) have? a) In general business & b) for Lisbon in particular › Where does DriveNow have the **biggest impact**?
Recom-mendations	› Which **recommendations** can you make for the city of Lisbon to support FFCS? › Which **measures** are necessary in the short- and long-term (>5 yrs)?
DriveNow in general & Industry Analysis	› What **distinguishes** DriveNow from its competitors (e.g. car2go)? › How would you describe your **competitive advantage/USP**? › Which **customer needs** are you fulfilling? › What is the **consumer motivation** to use your service? › Which are the (new) **target groups** that DriveNow addresses? › Is the offer easily accessible to the "**mass**" (or rather to a "**niche**")? *For the following questions, **compare** DriveNow to other alternative transportation means:* *a) considering auto industry/private car ownership* *b) considering public transportation* › Where does DriveNow **add value** to the user? Which are the **competing factors**? › Which factors the industry takes for granted have been **eliminated**? › Which factors are **reduced** below the industry standard? › Which factors are **raised** well above? › Which factors are **created** that the industry has not offered before?

Interview Guide B: Car Sharing Customers	
Car Sharing and DriveNow	› What other car sharing providers do you know at least by name? › Which have you tried? › When do you use DriveNow (which occasions)? Why? How often (per week/month) and when (days, nights, weekdays, weekend)? › How was your experience with DriveNow? › What do you like/appreciate about DriveNow? › What is negative about the service? What would you like to be improved? › Do you care about the brands of the car and about the different models (e.g. MINI, BMW 1 Series, BMW i3 electric)? Why (not)?
Alternative Transportation Means: Public & Private car	› Which other transportation means do you use? › Which do you prefer and why? › Do you own a private car? if yes, are you thinking of giving it up considering new alternatives, such as car sharing in the market? › Please name 5 of the following factors that are true/high for DriveNow and do the same for public transportation: Independence Flexibility Simplicity Availability Fun Costly Time to get from A to B Accessibility Pleasure Comfort Convenience Reliability Complex (to use)

Appendix 9.2 | Interview Transcripts

Interview A1	Expert 1: DriveNow Head of Corporate Development

Lisbon market, challenges and customers

*Why did you choose Lisbon to enter as new market? Who was involved? (**determining factors, market attractiveness**?)*

There are different factors we look at: population density, age distribution, disposable income, etc. – how they develop. And in Lisbon we saw that in spite of a relative low disposable income, the preference of cars was extremely high. In addition, we got a partner, Brisa, who approached us for a car sharing cooperation. And then we looked at possible success factors: among others, there is a really low density of bikes in Lisbon, it is the city of seven hills, so there only few bikes on the street. So, people rather take a car than a bike. You have some tense parking pressure, but in some regions within the city it is still moderate. In Bairro Alto, it is certainly a bad situation, but besides that it is quite ok. There is already a quite developed mobility market with MyTaxi or Uber being already for some time in the city. These are factors that show us there are already people, who use digital (mobility) products. But up to now, there was no actual car sharing in town. Only CityDrive and Hertz 24/7 but with a really small fleet of only a few cars. So, they already slightly opened up the market for car sharing. And then we entered with a really strong partner, Brisa, having over 400,000 customers through ViaVerde.

Taken together, we see that there is demand for new mobility solutions, there are only small players and the city of Lisbon is quite open-minded about car sharing. And we got the permit, i.e. to park the cars around the city except some regions. There was already a political set-up and conditions given by the city that facilitated the market entrance.

Of course, the purchase power is not as high in Portugal, but its economy is on a rise. And we evaluated the preference for premium cars that we offer via free-floating as pretty high. So, we said, with the given conditions, and together with the partner, we are able to bring up a customer base quite quickly and to convert them into active customers. Lisbon is an exciting city, despite the weak income factor, there is quite a big start-up scene, many students. There is a hype in the city but there is no attractive mobility service. Besides having Uber and MyTaxi in the market.

*How would you **compare Lisbon** to other DriveNow markets? What is **unique** about it?*

We see quite different usage patterns. Typically, we have a similar rhythm in all cities with peak times in the morning between 9 and 10AM and then another peak around 6PM. What we see in Lisbon is a similar pattern just postponed. The morning peak period starts later than usual, but in turn, the late peak time endures longer into the night. In particular at weekends, we have customers driving around 3, 4, 5AM. This is a quite unique usage pattern, we have in Lisbon.

Parking issues are similar to other cities like in Milan.

The city structure invites for packages that we will introduce soon. So, you can use them to go the beach. This will be a quite unique use case we don't have as such in other cities of course.

What is also special for Lisbon, we included ViaVerde as a payment method. Customers in Lisbon can use their ViaVerde account for DriveNow. We don't have any similar thing in other cities, there it is the common bank account or credit card. Saying, the integration of ViaVerde customers into DriveNow makes ViaVerde or better Brisa a quite unique franchise partner that we found here.

Compared to other franchise partners, like Helsinki and Copenhagen, our partners there are well-known but don't have a similar mobility offering or app established that allowed for integrating customer data into our DriveNow service.

*What are the key **challenges** and **difficulties** in Lisbon?*

It was a good effect that we entered in cooperation with ViaVerde, which is already established in Lisbon and Portugal, thus, reducing the adoption hurdles. In general, Lisbon or Portugal is known for being, let's say, a test market for early adopter products. The big challenge, that we have in any market, where we enter as the first free-floating car sharer, is that you have to do a lot of explanation. There is a strong need to educate the customers about the service, the minute-based fees, what they include, that it is an app-based product or service, which also serves as your key to open a car keyless. So, we had and still have to explain intensively the core service and how the product works.

Since there haven't been any direct competitor in the market yet, as for instance car2go in Milan or Vienna, it's much more work. Otherwise, with car2go already in the market it is easier because people are rather aware of what free-floating is.

Lisbon, impacts and recommendations

*Which **implications** does free-floating car sharing (FFCS) have in general /in Lisbon in particular?*

There are studies that show that with free-floating car sharing, there is a true incentive to give up car ownership. Especially the second private car. They show that one FFCS-car replaces 3 to 6 private cars. Because with free-floating you have a flexible service, that you can rely on, compared to station-based car sharing that is less and less flexible. So, we offer a reliable mobility service. And of course, it depends on the single customers. How much they drive, when they drive. It is proven that private cars are standing up to 23h a day in average. Or in Copenhagen, they observed cars standing from Sunday to Friday without being moved once. This shows people are using their cars only at weekends visiting family and friends. And this can be easily done with DriveNow. So, by replacing several private cars, parking spaces become available, parking pressure is reduced and the city can use the freed-up space for new infrastructure, green spaces, parks etc.
Another factor is the environmental impact of course. We have always the latest cars with the latest emission-standards and of course, especially with electric cars in our fleet, we offer green, emission-free mobility that benefits the environment of the city.

*What do you **recommend** to the city of Lisbon to further support FFCS?*

What we would like to see is that in terms of our **parking permits** that we already have, that these include **all residential areas** as well – that is currently not the case. Also, areas with time restrictions. Because they are not only operating barriers for us, but also and more importantly, hurdles for the customers, because they don't know whether they are allowed to drive into certain areas with a DriveNow or drop it off there. Plus, it reduces the relevancy of our service. If you look at Bairro Alto, there is one street allowed to drive and all the other are not. So, if you, as a customer, live nearby, you will say 'ok, DriveNow is not as relevant to me because I cannot use it as I would need it'. The more parking areas we can use, the more does the relevancy of our service increase - for the inhabitants in the city, and with that, the greater the environmental implications as well, in terms of both parking issues and private car reduction.
Moreover, the city should think about introducing **mobility hubs** in Lisbon. What really makes sense, if you have a hub, for instance in Alfama up to Graça, or other historic areas where parking is extremely difficult, the city may reduce the number of vehicles on street by offering preferred parking dedicated to FFCS. Because we know, only then, people will start switching to car sharing, they will start and increase travelling in **intermodal** ways, meaning they will drive with a DriveNow up to a hub, then change to other transportation means like bus or metro. They will take a taxi to drive back home, after they had a drink in the city. With that, DriveNow becomes more relevant to the Lisbon citizens, especially in dense residential areas, and provide an incentive to abolish your private car because they can actually use a convenient alternative.

Considering **electric drive**, in principle, yes, we would come with more electric cars in our fleet, but only if there is an appropriate charging infrastructure provided. It's a step-by-step process. In Lisbon, there are a lot of charging stations, however, many are not up-to-date or not working, so we cannot use them for our i3s. i3s are really popular among our customers, also in Lisbon, where the share of the fleet is still quite small. One has to consider, that electric cars come with higher operating and maintenance costs, because it has longer charging and standing times. So, if a i3 runs out of battery at 6PM, it needs to be plugged in and then it stands there during peak time and cannot be used, which means lost revenues and a lost customer. Electric cars really require a solid charging network with quick charging stations in order to be profitable. Only if Lisbon cities decides to do the first step in this matter, we and Brisa will be up to increase the amount of i3s in Lisbon as well.
Initially, Lisbon wanted a 100% electric fleet, but once we calculated the business case and all the extra costs, they realized that it is a step-by-step process that involves both parties: we offer the car sharing and the cars, and it's the city's responsibility to offer the infrastructure for it.

DriveNow, competitive advantage, competition	*Where does DriveNow **add value** to the user? Which are the **competitive factors**?* There are different criteria. If we look at the different modes of transportation, biking, walking, bus, tram, scooter, taxi, etc., we have to consider how pricy each is, how convenient each is – but this is rather subjective – how long is the average trip. But there are several studies that show the benefits of car sharing depending on each case of transportation. And then you can **compare each mode according to different factors: availability, reliability, price and time it takes from A and B**. A metro can be running every 5mins but it can also take a huge **detour** to bring you from A to B with two times switching lines. So, **it can be available and reliable and quite cheap, but in terms of time in total you need from A to B it is aced out by DriveNow**. Then, **convenience and comfort, pleasure and fun, these are also advantages of DriveNow that you can use to compare to other transportation alternative**s. And comparing to a private car, you have to make the calculation what your car costs, and you will see, considering a moderate usage of car sharing, you can drive quite a lot with DriveNow to come up to a similar cost level. Because a private car with all its costs, from acquisition to maintenance, it is a lot. Of course, DriveNow is more expensive than public transport, but here, one has to consider car sharing as a complementary service not a substitute. Don't see it as a direct competitor. We are complementary to public transport, to Uber and taxi. *What is your **competitive advantage**, your USP?* From my perspective, considering competition, the one with the highest availability wins the race. Then, the diversified fleet mix is a significant factor. Sure, car2go for instance, added some models to its fleet that consists primarily of smarts. Four models, A class, GLA, etc., that is four against nine models that we have. In addition, we have **electric cars in every city**, whereas car2go only operates an electric fleet in Stuttgart and Amsterdam. In Munich for instance, they don't have any electric smarts. By contrast, we bring electric mobility to everyone and every city, anywhere where we are available. This is a true USP. Also, one can drive with more than two people in our cars, what you cannot do with car2go. You can share your ride (and the costs) this way. Although, of course it is an advantage when one takes a tiny smart and needs park in a very difficult area where parking is limited, for instance Saturday nights, where the parking situation is horrible everywhere. Besides, the whole UX: we see our competitive advantage in how easy and convenient it is to use our cars, to unlock them with the app, or how transparent is the invoice, how fast can I end the rental via app. These are all factors, that you can consider. Of course, a smart can be also unlocked fast, but you have to enter the code outside, and this can be un-comfy when it rains or snows, while with DriveNow, you unlock the car, enter and once inside only then you enter your pin to start off. Also, it depends on individual preferences, but our cars all come with premium interior and features indeed, such as nice seats, a performance (sports) steering wheel, or a head-up display in the Active Tourer – all these are factors that justify the price-premium and people are willing to pay for that.
Details	Expert Interview by Eleftheria Kapourani. Audio recording and transcript. Munich/Lisbon, November 28, 2017.

Interview A2	Expert 2: DriveNow Marketing Manager

DriveNow, competitive advantage, competition

*What **distinguishes** DriveNow from its competitors (e.g. car2go)?*

DriveNow comes with a **larger variety in fleet**: small cars like MINIs, electric vehicle i3, 2Series convertible as well as larger vehicles like X1. But availability of each model differs among locations. That are vehicles that competitors like car2go only have partially in their fleets. While car2go still operates a pure smart fleet in many countries, in particular South Europe, DriveNow has its **USP** in offering '**a vehicle for every occasion'** – i.e. for every use case and purpose of driving a car; being it a trip into the countryside or picking up a new washing machine and transporting it back home – everything is possible with a DriveNow car. Comparing to local competitors like 'enjoy' in Milan or 'Zipcar' in Brussels, we offer the obviously **higher-quality premium cars** for car sharing.

All DriveNow vehicles come with certain **features**, like LED headlights, heated seats, smartphone connection, and often also with leather interior which is a plus for hygienic aspects compared to textile seats that you cannot clean as easily. We want that our customers have a **great experience**. That's why we offer premium cars with high-quality features. With DriveNow you can also share the car **with your friends**, with more people than just one. And this brings a total different experience when you can share your ride with family and friends for instance to the airport. Compared to a taxi, which costs a little fortune or to car2go, where you only get two cabin trolleys into the smart.

Customer Needs & Target Groups

*Which **customer needs** are you fulfilling?*

We look to fulfil our customer needs by reflecting **all aspects of everyday life**: we have customers commuting to work, those doing their weekly grocery shopping at weekends, the ones who take a DriveNow to visit family and friends living outside the cities, especially on holidays, like Christmas and Eastern. Or simply, when it's raining, the bus is running late and you want to get from A to B as quickly as possible without getting wet. So basically, we aim to fulfil any customer needs by providing a uniformly distributed fleet across the city, so that customers don't need to walk to long to reach a car, otherwise they won't use DriveNow. If s/he needs to walk 1.5 km to the next car and the metro is only 300m away, of course, the metro wins.

*What is the consumer **motivation to use** your service?*

That is diverse… It can be the mind-set, the attitude of customers who use the service due to **environmental and sustainability aspects**. Because they say, 'I gave up my private car, which was an old Diesel, and I don't want to buy a new one, because it's too expensive in maintenance, too high running costs. And I rather drive electric, the i3, or smaller MINIs…'.

Or customers choose car sharing as **substitute for a second private car**, that they don't need to acquire this way but still remain flexible. Then, there customers who cannot or don't want to afford a car in a city, because it has high running costs, e.g. parking. And they say, 'in summer I rather use the bicycle and car sharing mostly in winter, or in summer for an excursion., and that is much cheaper in sum'. Plus, one has the advantage to have the possibility to most often use the **latest cars**, without worrying about service and maintenance of the car. So, **convenience** is also a major factor, why customers use DriveNow. And getting the chance to drive a BMW or a convertible is also very appealing, that you wouldn't have otherwise. Also, electric drives are incentive to use DriveNow, because it's a unique experience in current times. When you try it once and notice the acceleration and how quiet the car is, you do it again and like to share the experience.

*Which are the (new) **target groups** that DriveNow addresses?*

New ones are in particular the **younger target groups**, 21 years old and above. Generally speaking, students and young professionals , that the traditional automotive industry, and in particular premium OEMs like BMW Group, did not address before, rather they focus on people who have the buying power to invest in a car. A typical student that does not have much money available, but uses here and there DriveNow, gets used to the service in an early stage and later uses it even more with rising income, once s/he has a job. Meaning, you build a **strong relationship** with the DriveNow brand in an early stage, and moreover, they are the digital natives and tech affine. That's why we also cooperate with universities, include them in our business area, so that students really can use the service. DriveNow is still a digital product, so it's rather interesting for younger groups where the hurdle to use the service is rather low.

*Is the offer easily accessible to the **mass** or rather to a **niche**?*

Depending on market maturity, where DriveNow is available for a longer time, like Germany, we rather go towards a mass market. This is reflected in the age distribution of our customers, it's not the younger group only, but the average age lies above. And here we have customers, who also use the service for business purposes, e.g. flies from Munich to Berlin and visits customers there, S/he uses DriveNow to get to the airport,

to the customers and back to the airport again. So, also 40+ and 50+-year-old ones are smartphone users, thus have become familiar with tech services and use car sharing alike. Today 40+-year-olds make up a third of our customer base. Someone who is already older, a parent with family, kids, s/he expects some quality and thus we have a broader acceptance among 'older' customers as well because we have the right car for their everyday life.

Industry Analysis (Blue Ocean Framework)

Where does DriveNow add value to the user? Which are the competing factors?

Availability: Private car, if it is really mine, it is always available and thus, DriveNow loses some points here. Comparing public transport, it really depends on the timing: during the days, during rush hour, public is running with high frequency while DriveNow is having only a limited fleet that is highly used in those peak times. So, it depends. But the situation changes during night, when there is higher availability of DriveNow compared to public that comes once or twice per hour.

Location: Since DriveNow is free-floating it provides the best score let's say. Your private car may be at home, parking, while you might spontaneously need a car wherever you currently are, just not at home at your own car. Public transportation depends on the network. In some cities, you can hop on at every corner. Mostly they are concentrated on the actual city centre, while DriveNow might cover more 'remote' areas within its business area as well.

Accessibility: there it's definitely the private car ranking high, followed by public transport that everyone can use from young to old people. Whereas car sharing requires a membership that is only possible for car licence holder that who are at least 21 years-old. But this is only an entry barrier… afterwards it can be neglected and DriveNow cars becomes easily accessible.

Selection: Well, private car is at the bottom line since you only have one car – usually. Public a bit higher, since you can choose between bus, train, metro, etc. but still the selection is limited and some routes are only covered by single transport means. Whereas with DriveNow you are free to choose among a variety of car models according to your own preference.

Costs: Public is the cheapest. DriveNow is a bit more expensive but if you compare car sharing with owning a car it is much, much cheaper. Not alone the fix cost for purchasing the car, but far more the variable ones like maintenance and service.

Flexibility: Private car wins, I think, because I can drive anywhere with it. I can drive to Italy or to the North Sea, I don't have to reserve, pre-book anything. DriveNow is still more flexible in terms of 'I also can drive anywhere', well not so far away, but at least also out of the city. I can rent it for a few minutes or for 24h (with the prepaid packages). Considering public means I am bound to fix schedules and routes. So that's a minus for public.

Reliability: I would say, the private car is most reliable, I know it and I am used to it. DriveNow is also very reliable though. We also see that as our mission to provide customers with a product that s/he can rely on, meaning e.g. you can always reach customer service and solve most of your problems at the spot from distance by phone. In critical situations, there will be a technical service coming as well of course. So, one the one hand you have the support, on the other: the product itself you can rely on: based on the app you have all information you need, how much its fuelled, where is it parked etc. When the map says its located 300m away it truly is. Public transport though, well depends, some cities have better networks some with worse. You never can be 100% sure that the train, the metro etc will run and if you have an important appointment you better take one or two trains earlier.

Convenience: DriveNow, I would say, outpaces the private car, because you don't have to worry about anything: you don't really need to fuel up the car, take car the service. You can find and drop the car anywhere within the business area and you don't need to care about parking fees (as long as you stick to our parking rules), or how long the car will stand at a public park lot, where usually it is limited to some hours only. Private car follows in terms of convenience, as it is usually parked in front of the door and you can decide at the spot whether to take it or bike instead. Public, however, is much more inconvenient due to the fact that I cannot choose my fellow passengers, that I have to accept detours or longer tours because there is no alternative of a direct route.

Pleasure: I rank public transport far at the bottom. It's self-explaining. Private car, strongly depends on the model you have. But considering that you can drive a variety of models with DriveNow, I would rank car

	sharing a bit higher. Because we offer more possibilities to drive with pleasure: being it electric within the city, a convertible on a sunny day or the X1 to take your friends to a ski excursion outside of Munich.
Lisbon, impacts and recommendations	*Which recommendations can you make for the city of Lisbon to support FFCS?* *Which measures are necessary in the short- and long-term (>5 yrs)?* From a marketing perspective, it is important to **convert** registered customers to actively driving ones. When you enter the market with three strong brands, BMW, MINI and DriveNow, you have to ensure that those who registered just due to the brand name or positive publicity around the launch, actually start driving. When in the beginning, lots of customers register due to PR and free registration, but they need to become active long-term customers - that is the biggest challenge in most markets. You need a mix of measures to address this issue. Being it traditional advertising that you can see out of home, or CRM measures, push notifications on your phone, etc. You need to find a reasonable combination, depending on the users. And you have to come with incentives to try and use car sharing. Because we can see once customers tried and had a positive experience, they continue using DriveNow, because we offer multiple use cases where car sharing is the adequate mobility solution you were looking for. Measures by city: It is very beneficial when cities offer **preferred parking spaces** for car sharing vehicles specifically. That is a further incentive for customers to register and use DriveNow, because you know you will get a parking lot. And a further important aspect is a public **charging infrastructure** in every city. It pushes the acceptance of electric cars among customers and reduces the threshold to drive electric when you secure charging availability.
Details	Expert Interview by Eleftheria Kapourani. Audio recording and transcript. Munich/Lisbon, November 30, 2017.

Interview A3	Expert 3: DriveNow Head of Public Relations

About BMW entering the car sharing market and why free-floating

Why car sharing by a big automotive OEM, BMW? Why free-floating?

Speaking from the BMW perspective, the basic idea behind the foundation of DriveNow was to develop a sustainable, profitable business model. There was a clear vision to expand to new mobility services next to the core competencies of a car manufacturer. Determining factors are based on the market trends that more and more young people don't value car ownership as before and thus don't buy their own one anymore. Even though younger people are not the typical buying group of BMW and MINI, OEMs need to consider the trend of the declining status of car ownership. And they must question how to address those young people, that would be potential customers later. Basically, a way to tap into new segments, that were not reached with traditional car selling.

Moreover, DriveNow addresses the question or the trend, that in urban areas people don't and cannot use their private cars, for instance due to restriction in the use of private cars or traffic and parking congestion that make the usage of a private car less and less attractive. And one should account for these trends, while at the same time, create a new opportunity to provide society with an alternative mobility solution. Thus, BMW generates a service around its core business of cars.

Based on that the free-floating car sharing concept was established. And why free-floating..., because car sharing was already existing before, but more as a niche product (station-based), and for the cities one needed something really flexible, as flexible as basically your own car, so that it will be available 24/7 anywhere. So, it needed to be free-floating.

New Target groups

Consequently, BMW reaches a new target group, that they did not do before with their core business and considering the threat that car selling within urban areas will decline in mid- to long-term, so car sharing provides the company with the opportunity to be present in those cities and gain market share. Often, BMW is blamed to use DriveNow only as a marketing tool to give potential customers easy access to the brand's cars, i.e. to generate test drives, so that they later buy them. And this is certainly not the case. That was never the intention.

Electric mobility

Considering the i3, however, yes that is a special case where car sharing can help here to push for the automotive revolution towards electric mobility. Because by providing a broader customer base with access to electric cars, much more people can actually test and try electric driving DriveNow. Especially those who are just about to decide between an electric and gasoline car, they get the chance to drive i3s and get convinced, that it actually is a fun car. And only then, it's welcomed to regard car sharing as an instrument to facility customers with the purchase decision for an electric car. But basically, it is only a nice side effect, not the intention. For instance, if customers decide to move to rural areas later or have a family and truly need a private car, and then they say 'yeah, I had a nice experience with DriveNow with BMW and MINI so I stick to that brand' - but this is really seen a side effect in the long-term.

Implications for Lisbon

*Which **implications** does in particular free-floating car sharing (FFCS) have? In general business and for Lisbon in particular? Where does DriveNow have the biggest impact?*

Considering Lisbon now, free-floating is an addition to the existing mobility services that are offered up to now. It is a **new component in the city's mobility mix**, that is flexible, spontaneous, available and serves as a true alternative to a privately-owned car. **So that Lisbon's mobility mix gets enriched, extended and more attractive**. The more attractive and available the entire mobility mix is in a city, the denser the transportation network is, being it public transportation, taxi, bike sharing, station-based or free-floating car sharing, the more likely it is that people can be mobile without an own car. And this way, there is a change in mind-set, people start to rethink: 'Do I really need my own car? My second car? It stays anyway in the parking lot all the time. And yes, if I need a car, I can use car sharing.' And then there is a DriveNow vehicle around the corner, or an electric scooter, bike sharing, and then you give up the second car at least. And step by step, there is this rethinking that eventually results in giving up car ownership. So, for the city this means that, in the mid- to long-term, by enriching its mobility offerings, there are less and less private cars on the streets. That's the big goal.

And this way, parking spaces are freed up to be used for other purposes, to increase green spaces in the city, parking traffic is reduced, that in average accounts for one third of the overall traffic in cities. Furthermore, car sharing is a new revenue stream for a city in terms of parking fees that DriveNow pays per car. You can make the calculations and it's not like that the city loses money if people are giving up their private car.

And then, we have the environmental and sustainability factor and implications: Less private cars mean less kilometres driven. That is also proven by different studies. The Vienna and EVA-car sharing study of Munich show that clearly, in Munich for instance 41 million kilometres less are travelled per year, due to the existence of car sharing. So, you also have the reduction of emissions. And furthermore, we, DriveNow, have the electric cars that additionally reduce emissions in a city when you drive electric.

Short- and long-term effects

Short-term and long-term effects: Short-term you have the effect of being present and visible in a city, in the early phase after the launch. You create awareness by putting the branded cars into the streets. You create a touchpoint. People get curious and interested in trying car sharing. Once they do, they register and actively drive it. And then in the mid- to long-term, after they gained some experience with the service, and see how flexible and spontaneous it is, guaranteed by the free-floating aspect, they start to ask themselves whether they still need their own car. And so, it takes its course. The whole process of rethinking.

And for Lisbon, we see the car sharing market now at a very early stage. You have to consider that the sharing economy trend might have developed on a different pace there. Keeping the economic crises in mind of a few years ago, there is a different perception of people's belongings, possessions and what they could afford. Private possessions had and still have a probably higher status. It's something that people are proud of what they own. So, it takes some time until a certain level of wealth is achieved and people start to be indifferent of private belongings and they prefer using, and consuming instead of owning.

Recommendations for Lisbon

*Which **recommendations** can you make for the city of Lisbon to support FFCS? Which **measures** are necessary in the short- and long-term (>5 yrs)*

In general, I think, that a city needs to be open-minded towards car sharing and DriveNow, and that is what Lisbon does, as expressed by the mayor of the city: With DriveNow, the city is getting a new service that it truly *needs*. The city urgently needs a new mobility solution and they get it with DriveNow. This is a strong statement by the mayor.

We recommend the city to conduct long-term research and studies, similar to other European cities like Munich, Vienna, London and Berlin. Some cities even impose the condition of conducting surveys with all car sharing customers.

Furthermore, to make the offering more attractive to users, it is reasonable that the city creates **parking spaces**, such as **mobility hubs**, like in Munich or Hamburg, where lots of people are in transit and travel in an **intermodal** way. Where they get out of the bus and can use car sharing for the last mile of their route. Or you arrive by car sharing and switch to the train in order to get into the city centre in a more convenient way. Also, establishing **preferred parking lots**, that are only for car sharing and not for private cars. That happens here in Germany now due to the legal requirements imposed by the recent car sharing law. More and more cities introduce those parking spaces and thus make car sharing more attractive, because people living in cities will prefer car sharing over a private car when they always have to look for a parking lot for ages and instead see a free one exclusive for car sharing.

Now considering **electric mobility**, another aspect, electric in free-floating hinges on the question regarding charging infrastructure. Lisbon has a quite decent one in terms of its density, however, as far as I know, it is not quite usable for our electric cars, the i3s due to technical reasons. They need to update and restore charging points so that car sharing can make use of it and we can increase the electric share of the fleet in Lisbon. Important, it needs to be a **public infrastructure**. It doesn't make sense if they have the charging points in garages where car sharing vehicles cannot be reached by the network. And we see it here, the larger the charging infrastructure, the more customers take over charging the cars by parking the cars at a charging station. For example, Berlin, the charging stations were doubled recently within the business area and alongside, the amount of charging cycles done by the users themselves was increased from one third to two thirds (the rest is done by the fleet mgmt team). We could observe a true effect and improvement. The charging station needs to be close to your drop off area, so that you actually end your rental there and the car can charge. It is different to driving to a gas station, continuing your ride and parking wherever you want. So that is why we really depend on a dense charging network, so that people have stations around every corner. People will use electric cars only if they are available and this can only be if they are charged regularly.

We don't see any acceptance threshold with the i3. If they are available customers love to drive them. From our side, we have to consider how we can operate an electric fleet efficiently, that comes with much higher costs, and this can only happen when step by step the charging network is build up. Meaning, if we put 100 electric cars in Lisbon but there are not enough charging stations, then the cars will stand around, uncharged and we have immense costs maintaining the fleet, driving cars around to get them charged so that they become 'alive' – available to customers again. It is a process,

so that with increasing charging stations, we will increase the fleet by electric cars. It is an organic growth, that will allow us to operate quite profitably.
Once you incentivize charging, as we do by giving bonus minutes for charging and fuelling, customers will take over this job.

Competition, USP

*What **distinguishes** DriveNow from its competitors (e.g. car2go)?*
Well, the first point that comes to my mind is the fleet variety in car models. Although car2go diversified its fleet by adding Mercedes cars to the initially pure smart fleet, we still have an advantage considering the convertibles, the higher variety of MINI and BMW brands. A true USP, is that we have electric cars in every location, while car2go only in limited ones. And it is part of our strategy to give customers the choice whether to drive electric or gasoline. Many of our business and private customers as well, there are some driving only electric. It's surprising despite the lower availability. They do it due to their attitude, mind-set and environmental conscious.
Another differentiating factor is that our fee starts once you enter your pin and turn on the engine. So, you have plenty of time to open the car, put in your luggage, shopping, adjust your seat and mirrors and only then start paying when actually driving off.
Also, our brands have a true lifestyle factor: with high-premium cars in our car sharing fleet, we can reach customers who are auto affine, that otherwise would not use car sharing if it still had this unsexy, "eco"-image. And that is what other providers cannot offer who operate lower segment car brands. And in South European, like in Milan, we see that customers love to drive premium cars like a BMW. It plays a much bigger role which brand they can drive compared to some other markets.

Customers, behaviour and motivation

*What is the consumer **motivation to use** your service?*
In Lisbon, this is tricky, because Uber and taxi is much cheaper there, compared to Germany for instance. But still, there are some motivating factors: firstly, it is the car itself, the brand you can drive with DriveNow, as said above. Then DriveNow offers you privacy and freedom – you prefer car sharing to public transport when you don't want to sit in a packed bus or metro with all people, but rather you want to be on your own, listen to music, make a call. This differs to taxi and Uber in terms of ensuring full privacy. Moreover, electric cars animate to drive electric.

Target groups

*Which are the (new) **target groups** that DriveNow addresses?*
I mentioned the auto affine ones. Then, the B2B market is quite special. Business customers, who travel from city to city and can use DriveNow across the cities where we are available. Considering the increased flexibility compared to conventional car rental. And also within one city, where business people use the DriveNow instead of a company car. Or small organizations don't even offer company cars. Many used to take a taxi but it comes with much higher costs. And then there is a new trend of companies offering **MaaS** to their employees – Mobility as a Service. Meaning instead of a company car, employees can use MaaS-services by getting a contingent of money or free minutes that they can use for defined mobility solutions. For instance, Sixt offers that and has included DriveNow in the portfolio of MaaS-services.
Last but not least, **younger people** of course that were not traditionally addressed by automotive OEMs. And also, **elderly people**, best agers, who move back to the cities, where they get a good infrastructure, a good public transport network, cultural offerings. And they do not really want an own car in the city. But here and there, they want to be *auto*-mobile. And as they are becoming increasingly tech affine, and use smartphones, the web, they get more and more access to digital mobility solutions. It's a segment that will grow in the near future.

*Is the offer easily accessible to the **mass** or rather to a **niche**? What are your **segments** you are targeting?*
DriveNow absolutely has diverse target groups by now. When we started more than 6 years ago we focused on the urban dwellers, the young people, tech and social media affine, that are eager to try new stuff, the ones where we thought they will be our target group. Yes, they still are our main customer base, but besides those, we expanded to addressing a much more diverse market – from the young student to the retired 80-year-old. Male users are still dominating but we also observe an increasing female customer base.

Competing factors added value

*Where does DriveNow **add value** to the user? Which are the **competing factors**?*
DriveNow surely outpaces public transport in terms of individuality, as mentioned above, you can go anywhere, you are not restricted to timetables and predefined routes, but you can be independent and reach your destination in a much more flexible way. It is a much more convenient mean the public metro or buses. Considering the price, it depends. Usually, one thinks that public is always cheaper but when you are multiple sharing a ride with DriveNow, depending on the time and which route you take DriveNow can be actually cheaper. Then, the same with availability, it's the natural law of supply and demand, if you are lucky a

DriveNow will we parked directly in front of your door or it can be 1 km away, while public has its fixed stations, which may be only 5 min away. But this depends from user to user and can be vice versa. In any case, public transportation remains the basis of the mobility ecosystem in any city and this needs to remain like that.

Now, comparing to a private car, considering that you start at home, availability is highest here, because your car is always there, whereas a DriveNow might be 500m or more away. But if not, if you are somewhere else and spontaneously need a car, but it is at home, DriveNow wins the race. So especially for one-way trips, car sharing is a much better alternative. Take as an example you want to meet friends for a drink in a city, you can drive with DriveNow and take public transport, Uber or taxi back home once you cannot drive by your own. Considering price, as long as you drive less than approx. 10,000km per year, car sharing is cheaper. If not you rather have a private car or use public transport. So, for occasional usage, a private car is defeated by car sharing. Sure, if you have to commute every day to work, DriveNow is not appropriate for daily use.
A private car will lose more and more ground in urban areas, the more mobility hubs, preferred parking, the more privilege car sharing gains. Or when the parking licence is rising, when driving restrictions are imposed in cities such as for old diesels with high emissions. Then it's a win for car sharing.

Details	Expert Interview by Eleftheria Kapourani. Audio recording and transcript. Munich/Lisbon, November 30, 2017.

Interview A4 Expert 4: DriveNow Sales Manager (from Brisa)

Lisbon market

*Why did you choose to **partner with DriveNow** to **bring car sharing to Lisbon**?*

To give you some background, Brisa has a history of about 40 years and it started as a company building highways. That was our business, running concessions, we competed against other companies and in this case, we won a lot of concessions to build the infrastructure. Now, after these concessions end, we return everything to the state. And this is what basically Brisa did for the last 40 years – building and operating highways. Then, 20 years ago, we invented ViaVerde, like a transponder you put into the car and you pass toll stations, parking lots, you can even buy at McDonalds with it. You have a lot of services that you can use with it. So, about 5 years ago, as our highway business is reaching the end of its lifecycle, it's a matured market, we saw that we wouldn't extend our business by doing more highways and soon the concessions will also end. Therefore, we needed to diversify our business. **Brisa decided to shift its business from focusing on cars and infrastructure to putting people into the focus**. **This is the turning point, where ViaVerde moved from being just something you put in the car, to a brand that is much more than that.** There is a **new strategy** behind this brand. There are a lot of **new services bundled in one brand** nowadays. It's the only brand we use to communicate to our customers and the idea is **to bring the brand into a much cooler, lifestyle way** than it was a couple of years ago. So ViaVerde is the brand of Brisa, which is the holding company.

Brisa decided **that ViaVerde needed to diversify**, we started looking to different businesses, so that ViaVerde could become much more. So, we decided to do ride sharing, car sharing, multi-modal trip planners, we invested into other transportation means, public, buses, metro, - how could ViaVerde enhance their business? So, **we started to look to the entire mobility ecosystem**, that the city has and **where could ViaVerde add value to the consumer**. That is why car sharing entered our scope and we approached a couple of businesses. But in the end, after contacting also BMW we came to DriveNow.

*But why did you **decide for DriveNow**?*

Well, among the different operators, we saw a 'strong fit' with DriveNow. It is a very strong brand, and with BMW an even stronger brand behind. **And Portuguese people are crazy about premium cars** like BMW. Everything fit together and we both shared the vision of having a sustainable business model. Because to be honest, Lisbon city is quite at the bottom regarding city size compared to the others. It is one of the smallest to have car sharing running profitably. So, we made some calculations, assumptions and evaluated the business case for Lisbon together with DriveNow before launching **and in the end, it was the right timing, the right place, the perfect fit**.

*How would you **compare Lisbon** to other DriveNow markets? What is **unique** about it?*

Lisbon is very different to the other cities. Maybe comparing to Milan, yes. But not in terms of size but I am thinking more of the people. We are different than Germany, Nordic countries. We have different needs and different ways of doing things. Just to give you an example, usually DriveNow has a morning peak and an afternoon peak – typical rush hours when people are commuting to work and back home. But here in Lisbon, **we don't have that morning peak, instead we have a *lunch* peak**. Because for us, Portuguese, lunch is much more than just having a sandwich. We take our time, 1 or even 2 hours and we go somewhere, meeting someone and eating outside. So, we have this lunch peak, that is quite unique compared with other DriveNow cities. Besides that, the business is the same. **But there are specific things about our culture, our way of doing things – that is different.** As a country we are quite small, so maybe that is also why we enjoy and welcome things coming from abroad. **We are early adopters in regards of innovation**. When we launched DriveNow, we saw the huge effect, that everyone wanted to try it and downloaded the app, so people **were eager to try** it. They **were not hesitant** to something completely new to the city.

Challenges and issues

*What are the key **challenges** and **difficulties** in Lisbon?*

Two main challenges. Despite the above, we still have a lot of people that don't know DriveNow or ever experienced driving it. So, the first big challenge is to **educate the consumer about everything**, DriveNow, car sharing in general. Because many still think of car sharing as entering a car with someone you don't know, that is not right, that is ride sharing. You need to educate how to use an electric car or that it is **digital based service**, that you **open the car keyless**, just with an app. This is completely new to the Portuguese market. There are lot of new things. So, **education is critical**.

We had a very good start in the beginning, but now we have to intensely educate people. Because, when I mention DriveNow to someone, they say 'yeah but I prefer Uber, because I don't need to drive nad the costs are roughly the same'. That may be true, but in specific situations, such as going to the airport, when you go to have dinner at a friend's place, or you go home after work, it is cheaper and it is the experience that is

totally different and better. That is something that we need to educate the people about, and the different use cases where they can use DriveNow. With a DriveNow, the moment you drive it is *Your* car. It is a different experience than sitting in a taxi. We need to communicate a lot so that people understand when and where they can use DriveNow. I like to give this example: if you go to Cais do Sodré to have a drink with your friends on a Saturday night, it is not a good idea to go with a DriveNow, because you won't find a place to park. You would go by taxi or Uber of course. But there a plenty of other cases, where you better grab a DriveNow and go, because it stands just around the corner for instance. And then, there are also lots of people who **actually enjoy driving themselves, it is BMW or a MINI you can drive. It is cool, it is fun.**
So, ok education is the first challenge for sure. The second one, which is strongly interrelated, is actually putting people to drive the cars. We had a very strong push in the beginning after the launch. We reached in the first month, an average 500-600 trips, compared to other markets this is super good. But then, what we saw a month after, **the amount of drives started to fall**. There are different factors explaining this. There **are people who experienced DriveNow only once and never drove again**. But we still have a huge bunch of **people who registered but did not drive yet**. And this is the **biggest challenge we are currently facing** – how to activate them and get them to test and try DriveNow. Because, even if they don't drive every day, if they drive once, they will do it more often, because the experience is super cool. And it is always the hurdle of the first drive. We need to put people behind the wheel, because when they experienced it the feedback is positive. They really enjoy it and it is exciting. If you compare metro to DriveNow… you see.
So yes, we have two main challenges: the education and actually putting people behind the wheel.

And then, there is another thing, that also relates to the other question about what is different in Portugal to other countries: we *love* cars and we love to own cars. And that is different. Because, for us, the **sharing concept is still quite far** from the average, as in Nordic countries, where people don't buy houses, cars, they share everything. We rather prefer to have our own belongings. Our own car, than riding someone else's car. We prefer our own house to renting one. That is something why we are still struggling a bit, a barrier. But slowly it is shifting. That is why we also say we are first an alternative to your second car. You can use DriveNow when you need the car. And then, we never say that we are a better alternative to taxi or Uber. We are a **complementary** product. **We are part of Lisbon's mobility ecosystem.** You can go by DriveNow and return with a taxi after your night out, or the next day, you can go by bike and return with a DriveNow.

Competition & Industry Analysis

*Which **competitors** are you facing in Lisbon?*
There is indirect competition, which is of course taxi, Uber, cabify, metro, buses, they also move people from A to B. But direct competition, we have CityDrive, which is a very small car sharing competition, operating for 4 or 5 years, they have maybe 30 cars and half of them are parked in one spot. It is still old-fashioned, the key is inside the car, you have to call to open the car. It is not very user-friendly. They said already last summer that they will expand their business in Lisbon and Porto as well. But so far, nothing happened.
Then, there is another one, bike sharing, which of course is different but it is based on the same sharing concept. They do only bikes, but it helps to explain DriveNow to a Portuguese guy: 'Do you know the bikes, it is exactly the same, just with cars. I mean of course it is a different transportation mean but the experience is quite similar. How to open the bike and close it. So, they are also kind of a big competitor. They will also grow and expand in spring, triple their bikes. And they don't have something, that is one of our biggest problems, parking. You can drop off the bikes anywhere. So, for them it is easy for someone to drop off a bike.

Then we are also constantly hearing about other car sharers, 'they will enter, they will enter', like car2go. But so far, it is just rumours. But to be honest, we want to them increase the competition, because we need to grow the market. As we said, if you have several options to use, it buidls a shared ecosystem. Once you use one, the next time you use the other. So, for us competition is good to increase the penetration rate of car sharing in the city. It is good for us to become sharper and smarter. Yes, we are the first one, so we may have the first mover advantage, but we need other car sharing as well, because when they communicate about the concept, they will also communicate about us.
About Hertz 24/7, it is a very small fleet, with about 10 cars, only electric BMW i3s. And it is station-based with a business park and two or three stations in the city centre. But they are not so much interested in growing the business.

Target groups, needs and preferences

*Which are the (new) **target groups** that DriveNow addresses?*
Basically, from an age perspective, we have one third of customers between 18+ and 30, one third 30 to 40, and one third of 40+. It is quite balanced. So, we have not only the young ones, but surprisingly, we also have quite a lot elderly people using the service.
From a gender perspective, of course, males are dominating with up to 90% of our customer base. Probably, because men are rather prone to try out such new things. And then it is also a cultural thing, we like to drive our girlfriends, it is never the way around. Maybe it is a Portuguese thing, the guy is always driving the car.

We also segment by the **usage case**. So, among our customers, we have one big cluster of customers who have registered but never drove with us. This is a big segment that we need to cluster. There are even some who paid to register but never used it – that is surprising. Why would you pay if you don't need it? Because, of course, many took advantage of promotion and registered for free although they don't use it. So, this is an important target group. But it is related with the usage. Not with the lifestyle.

Of course, we also have **tourists**. Who maybe even know DriveNow from other cities. We launched the Airport operation last week, it is different from Munich because Lisbon Airport is quite close to the city, and you have metro or bus. But the fee is quite cheap instead. Then, we have **students**, who usually don't have an own car or they have but don't use it every day.
And we have professionals**, business people.** Which is also a big market, because you have the company paying for it, and it's a good mean to visit your clients. Cheaper than going by taxi or paying a company car that stands around. Compared to a taxi, they can drive by their own, listen to music, make an important call inside the car, they have fun driving a BMW. It is a premium car. **We see a lot of potential in B2B, when people use DriveNow for business trips**.

Adapting to local conditions

*Did you need to **adapt the product**/service to the Lisbon market?*

Yes, by having ViaVerde operating DriveNow, we needed to **integrate ViaVerde** inside DriveNow. What we did, we added the transponder to the cars. In other cities, when you fuel the car you have a card to pay at the gas station. Here, we don't have any cards, you go to Gulp, and pay with the ViaVerde transponder. You just enter the pin at the gas station. Same with toll, you don't pay cash, you can pass through ViaVerde line. So far, we have those two integrations.
In later stage, we plan to add all other services, that our customers can use with their private car with ViaVerde, you should be able to do it also when driving a DriveNow. For instance, if you go to McDonalds with a DriveNow, you can pay with ViaVerde, and then we credit your DriveNow account. So, we need a lot of integration of our systems in the background.
Another thing is, that we have a huge customer base at ViaVerde and basically, as we have already the customer data, so, when you register at DriveNow, you can do so through ViaVerde. So, in the future, we plan that people can use their ViaVerde account to login, without needing a separate DriveNow account. And in the background, we integrate your account and do everything to run smoothly. Because with ViaVerde we have already your driving licence and credit card information, so you won't have to authenticate again.
And, compared to some other DriveNow cities, we launched **without the card** to open the cars*. We are purely app-based. Very simple. Because honestly, the card would not work here. We are quite lazy people, we would not go anywhere to pick up the card and always to carry it with us to use it once in a while. We aim to be as *simple* as possible.
So, in the first stage, we just explained how it works, that you pay by the minute, and make people to experience DriveNow first. Then, we launched Airport last week, soon we will also have 'Drive and Save', and next year, the hourly packages that other markets already have. And so on.

Lisbon, impacts and recommendations

*What are the **implications** of free-floating car sharing in Lisbon?*
*What **recommendations** would you like to make?*

The good thing about Lisbon city is that **they share our vision**. They are quite worried about the amount of cars entering and exiting the city every day. There is a lot of traffic, on the highways, also inside the city centre. So, for the city, it makes a lot of sense. We share the same vision. They launched bike sharing as well and it is the same argument: to make the city more user-friendly, esier to move, with less cars, larger sidewalks. In the last years, they made a lot of constructions, reducing the streets for cars, increase the sidewalks. Every district has a park, a square with trees. They are investing a lot in improving the quality of the city and this is strongly linked to reducing the amount of cars. So by sharing the same vision, it is very easy to talk with them. For them, car sharing is crucial to reduce the amount of cars.

This being said, we are also negotiating with them, because they will release a new regulation about car sharing. So far, there is no law, nothing that defines and sets rules for car sharing, as it already exists in other countries such as in Germany since recently. This law will give specific parking spaces dedicated to car sharing. In a way, it will push our business. Not because we are DriveNow but because we offer a car sharing solution and they are quite happy that we bring a solution to reduce car ownership.

With these hubs, we can solve our **biggest issue: parking space**. Ideal world we would like to have is parking just for car sharing on the streets. And because we have ViaVerde transponders, with it we could also park

and pay with it anywhere, in any park in Lisbon. Dream world would be you can park wherever you want. So, if we find a solution with the city, with the new law, having this new regulation that offers

preferred parking for car sharing, or even in underground parking garages, where let's say you pay 1€ extra, we would solve, I guess, 90% of our parking issues.
Then the cars become better available, the service more relevant. It is like a snowball effect.

We also want to **have a preferred parking area for car sharing**, **even inside the campus, even at Nova**, so that you always have 5, 6 cars there and students can use it quote often, without worrying about where to drop off the car. Because we also see students as a main target group of drivers. This will also be very convenient for students, once the new campus of Nova opens up in Carcavelos.

Further, we also would like to increase the business area, because we still have a couple of areas within the city, where you are not allowed to drop off the car. So, it would be **good to have the entire city covered**. And of course, depending on the business and demand, we will see how we can increase, increase also the fleet.

Details	Expert Interview by Eleftheria Kapourani. Audio recording and transcript. Munich/Lisbon, November 29, 2017.

Interview B1	DriveNow Customer 1 / Student

Car Sharing and DriveNow

What other car sharing providers do you know at least by name? Any in Lisbon?
Not in Lisbon: DriveNow, Car2Go, Zipcar / Lisbon: None
Which have you tried?
Only DriveNow
When do you use DriveNow (which occasions)? Why?
How often (per week/month) and when (days, nights, weekdays, weekend)?
Occasions: If I need to go from A to B and I don't want to take public transportation OR I just want to drive because I love driving OR there is a BMW i3 around the corner because it is fun to drive; If I am late and I think that driving on my own will be faster because I am in control; For convenience reasons (e.g. heavy bags, after shopping).
How often: Two-three times a month in Lisbon; Two-three times per week in Germany.
When: Days, nights, weekdays, weekend
How was your experience with DriveNow?
Good: if there's a car just around the corner, I get a BMW i3 or Mini Cooper, and if the app is fast and responsive.
Bad: When the app doesn't work well (happens here and there but not too often), always when I have to type in the address in the GPS because it TAKES AGES..
What do you like about DriveNow?
Always the latest BMW and Mini models, and that DriveNow offers more and more BMW i3s, that the log in is faster, convenience, comfort
What is negative about the service? What would you like to be improved?
The app is mainly for reserving a car, but you cannot change for personal data/payment options via app. Moreover, the website is a disaster in my opinion. Once inside the car, again, it TAKES AGES to put in your destination in the GPS, why can't you put it in with the app?
[Note by interviewer: You indeed can enter your destination within the app before entering the car!]
Additionally, the car reservation process is annoying since you have to pay for an extension or do the reservation again after 15min (and this is mainly when the app doesn't work properly). Parking and driving SHOULD NOT BE the same price. No price transparency.
Do you care about the brands of the car and about the different models (e.g. MINI, BMW 1 Series, BMW i3 electric)? Why (not)?
Yes, I care, because driving a Mini, BMW or BMW i3 gives me driving pleasure, comfort, prestige.
Did you use DriveNow in other cities? If yes, any differences you observed?
Yes, I tried DriveNow in several cities in Germany, in Lisbon, and in Milan. So far, I do not see major differences.

Other Transportation means & Private car

Which other transportation means do you use?
Public transportation (mainly metro), Uber
Which do you prefer and why?
Uber (fast and convenient, you always get a driver within 5min) besides DriveNow because I love driving
Please name which of the following are true/high for DriveNow and for public transportation and private car. Please rate them in comparison to each other.

	DriveNow		Public (Train/Bus)		Private Car	
Independence	x	3		1	x	5
Flexibility	x	5		0	x	5
Simplicity		2		0	x	5
Availability	x	3	x	3	x	5
Fun	x	5		0	x	5
Price, Costs	x	3	x	4		2
Time to get from A to B	x	4	x	3	x	4
Accessibility	x	3	x	3	x	5
Comfort	x	5		0	x	5
Convenience	x	4		1	x	5
Reliability		2		1	x	5
Complex (to use)		3	x	4		0

Details Customer Interview by Eleftheria Kapourani. Transcript. Lisbon, November 11, 2017.

Interview B2	DriveNow Customer 2 / Student

Car Sharing and DriveNow

What other car sharing providers do you know at least by name? Any in Lisbon? Other than DriveNow, it is Car2Go mainly. Also Zipcar and Enjoy in Italy. In Lisbon I only saw Hertz 24/7.

Which have you tried? Only DriveNow up until now. In Munich as well as in Lisbon by now.

When do you use DriveNow (which occasions)? Why? How often?

Occasions: Whenever I need to get from A to B quickly and as convenient as possible and there is no good public transit connection, then I use car sharing. When I drive into the city and I don't want to be looking for a parking space I take a taxi or uber. Or I walk. Because the centres both in Munich and Lisbon are crazy. You never find a proper parking lot. How often: hmmm not so much recently, maybe 1-2 times a month in Lisbon; once per week in Germany maybe not more. When: it depends: during days, nights, weekdays, weekends… depends where I want to go.

How was your experience with DriveNow?

In general, very positive - if there's a car close by. Here and there, there are a few things to be improved of course. Sometimes, the technology has its bugs. The other day I locked myself in the car because I could not enter any Pin in the car. When I exited, the car alarm started off… I didn't know what to do. But after a while the system rebooted or something and it worked. But it took me some minutes. But this was only a one-time incident. Other than that, I am very happy about the overall process of reserving, entering the pin, driving and dropping off the car.

What do you like about DriveNow?

I like to have a variety of cars I can choose from such as the i3 or a Mini. It is a very convenient process. Free-floating I mean, you don't have to go somewhere and drop off the car but just check in the app for availability and that's it. You get high-quality cars: for the length of my travel, I have my 'own' Mini, that I could not afford myself otherwise.

What is negative about the service? What would you like to be improved?

The menu within the car is complicated when it switches between the Mini and the DriveNow Menu. I never know which one to use to enter my destination for instance or if I am looking for partner gas stations. I would like to have within the app some FAQ. Maybe the most important information, such as the pricing or the parking rules. I always need to look them up on the website especially here in Lisbon where I am not used to it yet, I never know where I can drop off the car for sure.

Do you care about the brands of the car and about the different models (e.g. MINI, BMW 1 Series, BMW i3 electric)? Why (not)?

Well not really care but I appreciate to have the possibility to drive those. Driving a Mini, BMW or BMW i3 is so much driving fun. I really enjoy it. It would not be the same experience or feeling inside the car if it was, I don't know, a Skoda a Renault maybe or a Seat.

Did you use DriveNow in other cities? If yes, any differences you observed?

Yes, I have used DriveNow in Germany, in Lisbon. Besides the offerings in Germany being more diverse, no. The service works the same. I am just looking forward to having day packages in Lis as well so we can drive to the beaches outside the city. Guincho, Costa da Caparica…

Other Transportation means & Private car

Which other transportation means do you use?

Public transportation (mainly metro, sometimes bus), and Uber in Lisbon

Which do you prefer and why?

Depends where I want to go and how much time I have. If I am alone I try to get public transit. But it depends on the schedule. In the evenings and especially nights more Uber: you get one within 3 to 5 min or so. And if I am with friends, you can split costs and it is sometimes even cheaper. And yes well if I drive outside the old town city centre, I also use DriveNow now.

Please name which of the following are true/high for DriveNow/public transportation/private car. Please rate them in comparison to each other.

	DriveNow		Public (Train/Bus)		Private Car	
Independence	x	3		1	x	5
Flexibility	x	5		1	x	5
Simplicity		2	x	3	x	5
Availability		2	x	3	x	4
Fun	x	4		0	x	5
Price, Costs	x	3	x	1		4
Time to get from A to B	x	4		4 - *depends*	x	4
Accessibility	x	2	x	3	x	5
Comfort	x	4		0	x	5
Convenience	x	5		0	x	4
Reliability		3		1	x	4
Complex (to use)		3	x	2		1

Details	Customer Interview by Eleftheria Kapourani. Transcript. Lisbon, November 15, 2017.

Interview B3	DriveNow Customer 3 / Car Journalist
Car Sharing and DriveNow	*What other car sharing providers do you know at least by name? Any in Lisbon?* Citydrive, DriveNow *Which have you tried?* Just DriveNow *When do you use DriveNow (which occasions)? Why?* I use it when I have to a more crowded place, usually when I know I will come back in another way (car). Help me in my work. Per month, maybe twice during the week, usually by day. *How was your experience with DriveNow?* It was a good experience, the application is quite intuitive, although the registration has been a bit complicated due to the credit card. In overall: good. *What do you like about DriveNow?* I like to know that I have all the payed parking lots, and to know that (for now, we will see the future) I find the cars always in good condition. But mostly, to know that I do not depend on others to get to my destination. *What is negative about the service? What would you like to be improved?* Two Things. First: the inscription. For a young audience, where DriveNow, intended to grab, the use of credit card complicates the registration. Secondly, the city crown is still very short, lacking areas near the "Expo" and in places of many companies as it is the case of "Lagoas Park " and "Tagus Park", if it were, it would use this alternative much more times. *Do you care about the brands of the car and about the different models (e.g. MINI, BMW 1 Series, BMW i3 electric)? Why (not)?* Honestly no. Perhaps because the fleet is still new. Whenever possible I opt for BMW i3, because it is always a different and less polluting experience. But if it was another brand, it would not have any problem. Thinking, even so that being cars from BMW / Mini group calls much more public, to be able to have a 'premium' alternative to “normal” transportation.
Other Transportation means & Private car	*Which other transportation means do you use?* Just Car *Which do you prefer and why?* I use only the car, because I like to depend on me to reach the places. I have not used other forms of transportation for a long time. Metro in Lisbon has been getting worse day by day, and the taxis end up catching the same traffic as me, and are too expensive for the service that is provided by them. *Do you own a private car? if yes, are you thinking of giving it up considering new alternatives, such as car sharing in the market?* Yes. My job is basically around cars, so my own car spends very little time on the street. But no, I do not think I would be willing to "give it up" yet ... *Please name which of the factors are true/high for DriveNow, and for public?* DriveNow: Independence; Fun; Comfort; Pleasure; Availability Public Transportation (e.g. Metro): Price, Cost; Convenience, Time to get from A to B; Complex
Details	Customer Interview by Eleftheria Kapourani. Transcript. Lisbon, November 25, 2017.

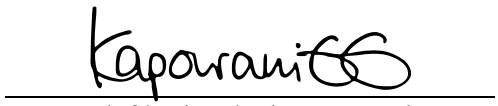
Interview B4	DriveNow Customer 4 / Business Manager at Insurance Firm
Car Sharing and DriveNow	*What other car sharing providers do you know at least by name? Any in Lisbon?* I don't know any besides DriveNow. It is the first time that I came in touch with car sharing through DriveNow… here in Lisbon. *Why did you register then?* I saw the facebook ad with a free registration code, plus, I received direct mailing from my former MINI car dealer. I was a MINI owner before, so I was interested in trying it out as a new service. *What do you think about it?* With the limited number of DriveNow cars, they don't disperse around the city so that people actually have them 'in front of their door'. That restricts the attractiveness of car sharing as a flexible mean. Well, of course it might change in the future depending on the growth and business development.But I see some real problems here, because, you know, we, Portuguese, for us possessions are really important, of high value, anything privately owned: a big house, everyone has a car, etc. In contrast to Northern European, Germans for instance, we think differently, we don't want to drive with a foreign car that we don't own ourselves. So this might be the real challenge for car sharing aiming at reducing private cars in the city. Ten years ago, no one wanted to live in the city. Everyone moved out of the city because they wanted to buy their own house, and not to live in an old building in Lisbon city. But now, people are moving back to the city, the urbanization trend has also hit Portugal. And with that, sooner or later, they will realize that it is a pain to have your own car in the city, you don't find a parking space, fuel, parking Ten years ago, everyone moved out of the city because they wanted to buy their own house, and not to live in an old building in Lisbon city. insurance, everything is too expensive. *When do you use DriveNow (which occasions)? Why?* When I want to go to the city, or from the city home. I live in the city centre, so I know the struggle you have driving your car and finding a parking. And then it stays there for several hours. I use it as an addition to my private car, because I don't use public transport. *How was your experience with DriveNow? What do you like about DriveNow?* *What is negative about the service? What would you like to be improved?* I liked it. Very much. But there are some things to be improved in the near future. In general, it is a user-friendly technology, but it took a while to find certain features: e.g. how to handle the navigation, in the app and in the car. And I reckon, that someone who is not tech-affine, not used to such apps, will still need some more time to figure everything out. Another example, the parking spaces: I had to check the website for the parking rules, ok, fine, but what about a stranger, a tourist, someone who is not from Lisbon, it is really complicated. So, why not make the app more user-friendly and add a new feature that shows where I can park, or maybe as soon as I park a green light or red light in the app or at the car display indicates whether the parking space I chose is ok. Green = parking is allowed here, red not. I am a big fan of electric cars, so I would really like to drive the i3. But I tell you, I never find one, I don't know, there are not many, ok, but really, I never had one shown in the app or it was kilometres away. So yes, I would love to see more i3s in Lisbon being provided by DriveNow. For sure, the city has to keep up the game and establish the appropriate network for that. Also I think they have to make DriveNow and car sharing in general more visible. There are so many people, friends of mine, who never heard of it before. So there must be more social media, digital marketing, there is lots of room to do things and increase awareness. But at the same time, demand should not be stimulated too fast, because, let's take *uber eats*, the delivery service by *uber* in cooperation with several restaurants in Lisbon, there was too much demand in the very beginning but not enough supply, not enough drivers to deliver the food. So people interested in ordering something got frustrated very quickly. So this negative image results in long-term damage for the business. And this could also be relevant for DriveNow: because sooner or later demand might grow exponentially but not enough cars will be available. So they have to find the balance of number of cars they have and the demand. *Do you care about the brands of the car and about the different models (e.g. MINI, BMW 1 Series, BMW i3 electric)? Why (not)?* Not really, although I was driving a MINI before. Of course it is a nice add-on to have, but actually it is all about the service, to be user-friendly and available whenever I really need it. Exception, I really care about the electric cars so, yes regarding the i3 I care.

Other Transportation means & Private car	*Which other transportation means do you use?* Only my Motorcycle and my private car, no public. And I walk a lot in the city. When others make a city trip they walk everywhere and do not complain but at home they don't even want to walk the 100m… people should walk more and complain less. *Do you own a private car? if yes, are you thinking of giving it up considering new alternatives, such as car sharing in the market?* I have my own car, but I won't give it up because of the specifics of my work. I really need to commute to the other side of Lisbon. Over the bridge. But as a citizen, in private: I leave my car parked at home and take an *uber*, walk or get a DriveNow to go into the city… and try not to use my car. *Please name which of the factors are true/high for DriveNow, and for public?* For DriveNow it would be costs are lower than private car; it is flexible, much fun, and convenient to get around when you need individual transportation. Also it is reliable and especially useful for short-distances. In contrast, I think with a private car, you are much faster, need less time to get from A to B. It is much easier to get access, because it is your car and you are independent of e.g. availability of DriveNow. Also I think it is simpler, although it is just a matter of time until you get used to something new such as the DriveNow app and menu in the car. And yes, because I said short-distance for car sharing, vice versa it is long-distance for private cars. You can do your long weekend trips with the kids and don't care.
Details	Customer Interview by Eleftheria Kapourani. Transcript. Lisbon, November 15, 2017.

Declaration of Authenticity.

This thesis is submitted to the Nova School of Business and Economics in Lisbon in fulfilment of the requirement for the Masters Degree in International Management. Herewith, I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person where due reference is not made in the text.

NOVA School of Business and Economics
Lisbon, January 3, 2018



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